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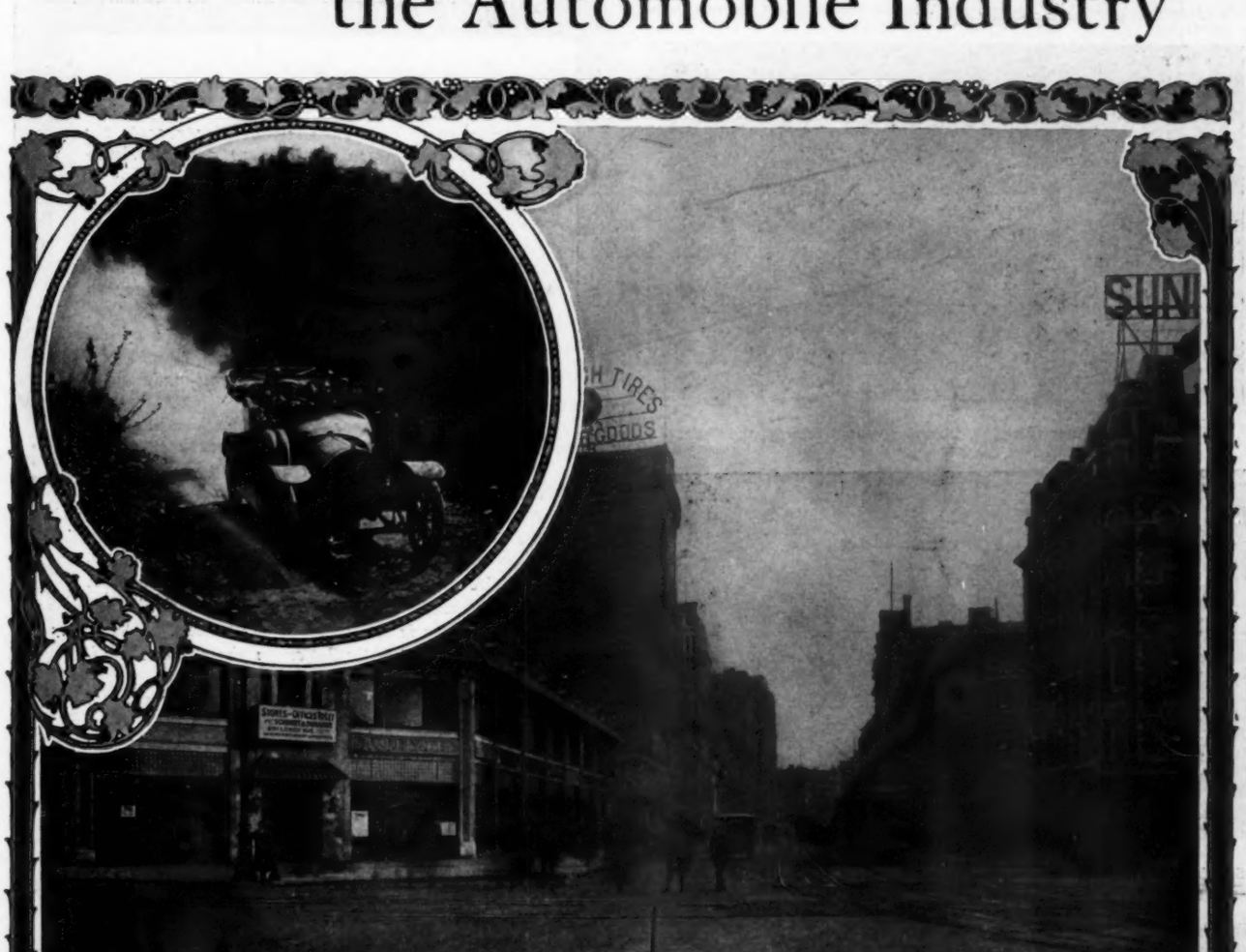
THE AUTOMOBILE

How New York Supports the Automobile Industry

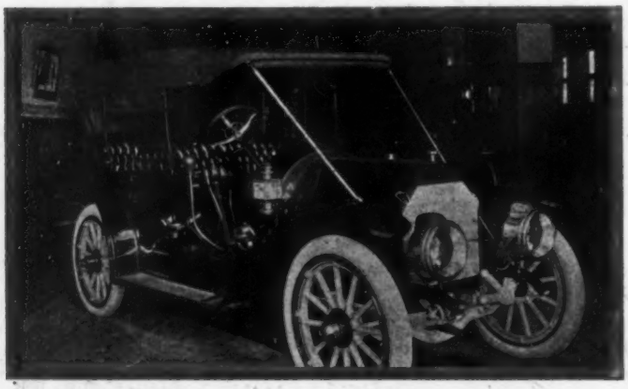


"THE ROW," LOOKING SOUTH FROM COLUMBUS CIRCLE, WHERE THE BULK OF NEW YCRK'S AUTOMOBILE BUSINESS IS DONE

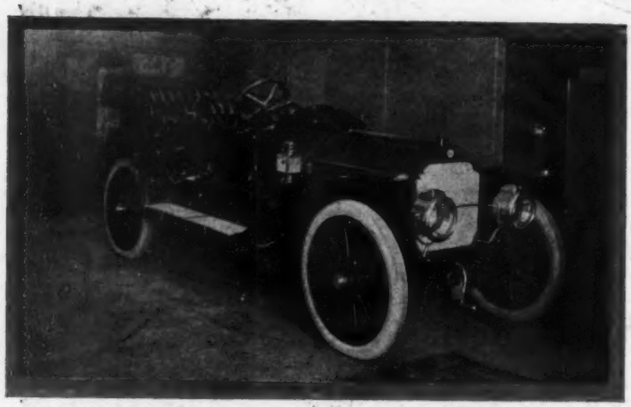
SIXTY MILLION DOLLARS represents the annual receipts of New York automobile sales concerns, reckoned on a conservative basis. Something over 33,000 cars form the basis for this vast exchange. New York buys for her personal use something over 20,000 automobiles this year, exclusive of trucks, electrics and steam cars. New York's taste in the matter of motor cars is omnivorous, every kind so far marketed finding some sort of a demand, but in the main the tendency is toward the cars of medium and higher price.

New York's "Automobile Row," limiting that district strictly to the companies which have stores on Broadway, is sales head-

Pierce-Arrow Automobile Agency, 233 W. Fifty-fourth Street, Pierce-Arrow.



United States Motor Company, Sixty-first and Broadway, Columbia.



Stoddard-Dayton Motor Car Company, 227 W. Fifty-seventh Street, Stoddard-Dayton.

Elmore Motor Car Company, 229 W. Fifty-fourth Street, Elmore.

quarters for 27,145 gasoline pleasure automobiles annually. There are 61 agencies and general sales agencies and branch houses between Forty-seventh street and Seventy-sixth street, handling 95 different makes of automobiles.

These figures do not take into consideration cars of foreign manufacture and do not include a number of important stores that are located just outside the limits of the zone described. But they do include the big majority of American-made cars of all classes and descriptions—the backbone of the industry. Of course it is a palpable fact that 27,145 cars cannot be sold in a year by the Broadway stores to the New York buying public alone. The selling field must be larger in order to afford an outlet for the product and while a number of the agencies have only the Manhattan territory in which to make sales most of them include considerably more territory and a few have as many as thirteen States to supply from New York headquarters. The significance of New York as a sales center is by no means confined to the metropolis alone.

The "Row" is the biggest, busiest and by far the most important automobile sales field in the world. There are fully 70 American agencies in New York, which handle upward of 31,150 cars annually and with the concerns selling foreign cars the number is swelled to 80 and the total number of sales reaches above the enormous figure of 33,000 cars a year.

The automobile selling fraternity of Manhattan takes in considerably more than $60,000,000 a year over its counters. If the profit on these sales is roundly 25 per cent, the gross income of the New York agencies is $15,000,000 a year.

Dividing this sum equally between the eighty different con-

AUTOMOBILE "ROW" IN MONEY TERMS.

$60,000,000 a year conservatively represents the annual sales of gasoline pleasure cars on Automobile Row.

33,000 cars are included in the yearly sales.

Of these about 21,000 are taken by the metropolitan motoring public.

It is estimated that about 12,000 cars are disposed of by sub-agents in territory tributary to the "Row."

There are eighty sales establishments of all kinds in Manhattan.

Seventy of these handle American-made automobiles.

Sixty-one stores are located on Broadway between Forty-seventh and Seventy-sixth streets.

The average price paid by New Yorkers for their cars is larger than the amount paid by purchasers in tributary territory.

Despite this fact New York buys more low-priced automobiles than any community on earth.

It also buys more high-price and medium-price.

The annual automobile bill of New York City for new cars is estimated at $42,000,000.

Business is slightly better on the whole than it was at this time last year.

It seems much better because the trade did not expect it to be so good.

The total volume of trade in 1911 promises to exceed that of 1910 by a considerable margin.

The factories generally are in position to meet the demands of the trade or to curtail production without causing such unsettled conditions as obtained last year.

cerns the pro rata share of each would be $187,500. On the general average there are ten persons employed in each salesroom and the average rent paid is in the neighborhood of $5,000. If the average income of the employes is $2,000, the total expense for that item would be $20,000. Light, heat, advertising management, incidentals and other expenses would account for a much larger sum. The total net profit of the various agencies, disregarding bad credits and losses, figures out a comfortable sum on the general average, but, like every other business, some of the concerns included enjoy a feast and some suffer the pangs of famine. The branch houses of many of the factories are conducted on a general salary basis, the companies themselves assuming the chances of profit or loss, but in the final analysis the business must be there or the branch will be metamorphosed into some other form of selling agency.

ABOUT MEN AND METHODS

There are upwards of 700 men engaged in selling automobiles along the "Row."

There are fully 500 clerks and office help employed in the various stores.

The average pay of the salesmen is in the neighborhood of $2,000 a year.

The best salesmen make $10,000 a year, and in a few instances even larger sums.

As a general rule, the sales manager of the establishment is the best salesman.

Three kinds of selling organizations are used in New York: First, agencies; second, general sales agencies; third, branch houses.

The rental of automobile stores alone, not including other spaces and departments, amounts to $500,000 a year.

The payroll of the salesmen and sales managers totals $1,500,000.

Clerical and office help costs $250,000 annually.

Advertising, freights, light, heat and incidentals foot up almost $2,000,000.

Other expenses of the "Row" bring the amount of expenditures well above $6,000,000.

The total gross income of the "Row" has been estimated at $12,000,000.

If six men divided the net income equally there would be six new millionaires each year.

Many of the selling organizations are corporations in which the stock is held widely.

There is an increasing number of branch houses operated as a part of factory selling.

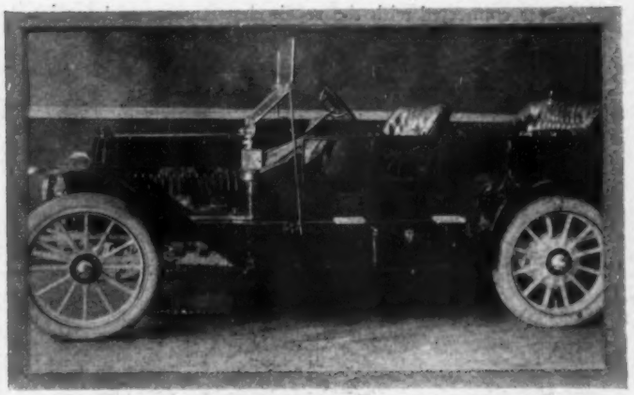
The territory covered by the "Row" extends in some instances through a dozen States.

In some cases branches are conducted for the prestige and advertising they may bring to the manufacturers, but the profit from such undertakings must be quite apparent to the factory managements or changes are made. It is recorded that several of the newer concerns operated as branch houses do business at a loss, but are continued for the single reason that it affords the representatives an opportunity to refer to "our New York branch house" in selling goods in other sections.

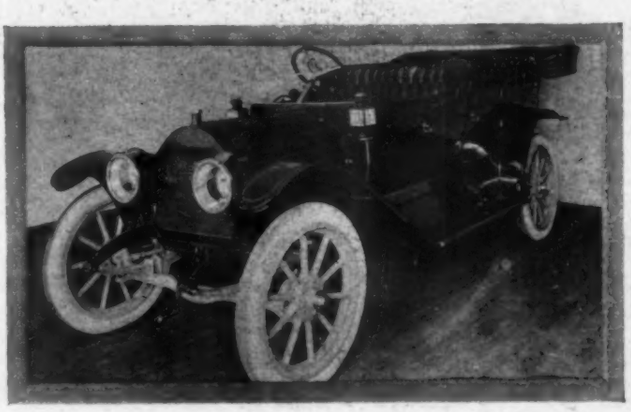
Automobile Row proper commences at Forty-seventh street and is limited to the Great White Way between that thoroughfare and Seventy-sixth street. The cross streets near Broadway afford locations for several big companies, notably, Pierce-Arrow and Rambler and a few of the avenues contain automobile salesrooms. But in the main the stores are strung along the

Packard Motor Car Company, Sixty-first and Broadway, Packard.

C. R. Teaboldt & Co., 1597 Broadway, Everitt and Owen.



Jackson Automobile Company, 1663 Broadway, Jackson.



Lexington Automobile Company, 1995 Broadway, Lexington.

greatest thoroughfare of the world between the lines of demarcation referred to.

The greatest number are bunched on both sides of the street between Fifty-first and Sixty-third streets, where it would be impossible to throw half a brick without damage to some well-known make of automobile.

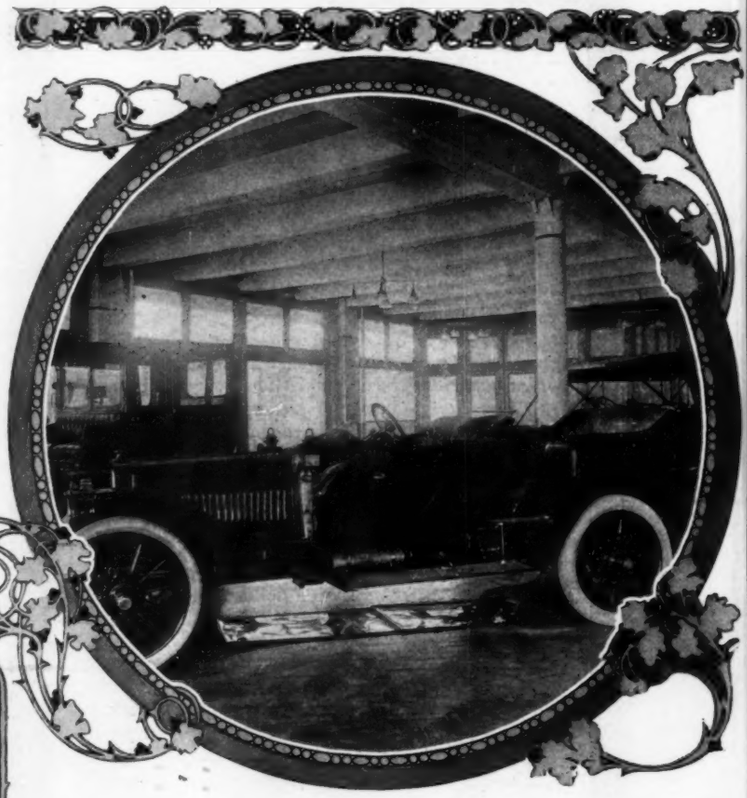
The concern on the "Row" with the biggest ideas intends to sell 2100 cars this year and the most modest prediction made during a thorough canvass by THE AUTOMOBILE was for 100 cars during the same period. The cars that sell for $1,250 and less average around 500 to the store, at least in the estimates given out by their representatives. The biggest and most expensive range from 400 down to 100 cars per shop. Definite figures were exceedingly hard to secure in many of the conservatively managed concerns. For instance, the Cadillac representative smilingly declined to make any estimate, which action could scarcely be laid to fear of comparison with the showings of other concerns. On the other hand several companies made detailed statements as to past business and future prospects and intentions as will appear below.

Making all due allowances for enthusiasm in the estimates secured, the figures reached do not appear to be excessive. Twenty-nine of the establishments on Broadway are limited to Manhattan Island as a selling field. Fourteen others include Long Island; eight more take in Long Island and Westchester county; five others include Jersey City; three have New York, New Jersey and Connecticut, and the others range from thirteen States to general distribution all over the world. There are 24 Michigan built automobiles handled on Broadway; 11 Indiana products; seven New York makes; six New Englanders; eight from Ohio and a representative showing from Pennsylvania, Illinois, Iowa, Wisconsin, New Jersey and Missouri.

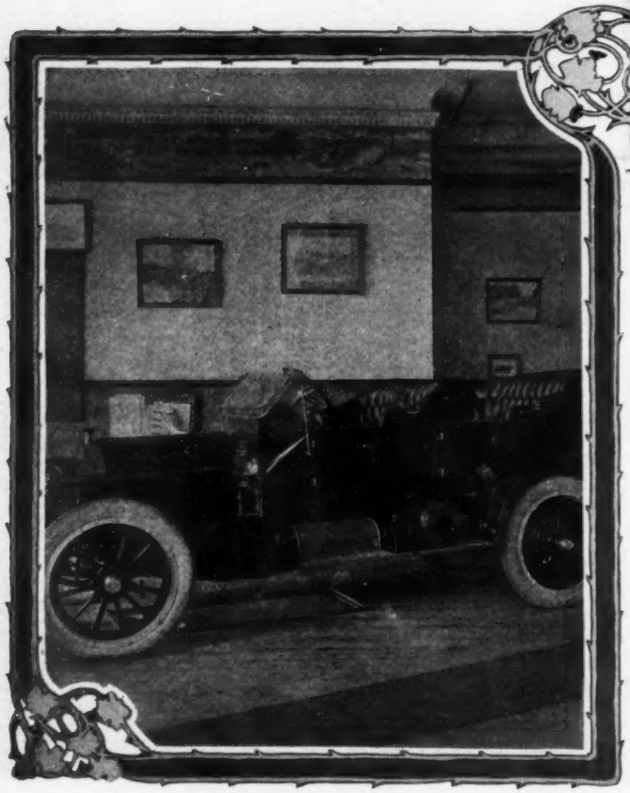
In the mile and a half that encompasses the "Row" there are employed in the automobile salesrooms a regiment of nearly 700 men, constituting probably the best body of salesmen engaged in the industry anywhere. This number does not include the forces connected with the repair departments and service departments that are conducted in conjunction with the sales departments and simply represents the number of men engaged in selling exclusively.

These men make from $10,000 a year down and a few may exceed that figure. The sales managers of the agencies are frequently the best salesmen of the establishments and make even larger sums where their compensation is rated on a strict commission basis.

The pay-roll of the salesmen and salesmanagers along Broadway is about $1,500,000 a year. Rent is about $500,000 a year, where the stores alone are considered. Where the New York branch house appoints agents in its territory a material deduction must be made from the gross income to take care of the sub-agent's commission in making the final distribution of the allotment set off to the New York house. This item is a variable quantity and a definite basis for figures is almost impossible to get at. It is estimated that about 12,000 cars are sold to ultimate consumers each year by sub-agents of the New York "Row." If this figure is approximately correct the gross income of Automobile Row proper would be reduced about $3,000,000 from the original figure of $15,000,000.



Lozier Motor Car Company, Fifty-sixth and Broadway, Lozier.



Knox Automobile Company, 1966 Broadway, Knox.

There are three distinct types of salesrooms. First the agency proper which may be conducted by an individual, partnership or corporation; second the branch house, which is operated in close relations with the factory or selling organization and in reality is a part of it, and, third, the general distributors who handle the whole output of a factory either as an agency or a branch house.

The usual mode of procedure in conducting an agency is to make a contract with the factory to handle a certain number of cars in a certain year. A deposit is generally required by the factory of the agent and usually amounts to 5 per cent. of the list price of the cars from which the percentage of the agent has been deducted. Delivery is arranged to take place gradually during the selling season and when the cars are shipped from the factory to the agent the transaction is subject to draft.

The branch house methods are too numerous and various to

describe in detail. In the agency transaction the percentage of advance payments depends on several factors. Some factories demand and receive larger amounts than are represented by 5 per cent., contingent upon the volume of the order and other considerations.

The general sales agencies are handled according to various methods which differ with each individual case and which are susceptible to no general rule.

As a factor in the national industry, the "Row" is undoubtedly one of the most important. The metropolitan motoring public demands a wide selection of the best types of cars and as a result the concerns that go to make up the selling fraternity encompass a broad presentation.

Business is more healthful this year than last and during the few warm, bright days that have been enjoyed so far this Spring the stores have been thronged from one end of the "Row" to the other.

United States Motor Company, Sixty-first and Broadway, Distributors of Maxwell and Columbia Cars.

"Ten degrees more temperature and a continuation of the sunshine, and we will all have to lease extra safes to hold the money," is the way one aggressive agent put the situation. Despite the emphatic statements that there will be more automobiles contracted for this year by the New York agents than they ordered last year the facts throw considerable doubt upon the protestation. In some cases the New York agents will get more cars than last year, but in others they will take less. There will be less panicky pressure to dispose of stocks at the end of the season and the probabilities of the case all point to a vastly more satisfactory business than that of 1910 with approximately the same volume.

Some of the more optimistic dealers are beginning to talk of a car shortage that will delay deliveries to late purchasers and they get real serious in discussing this phase of the situation, pointing to the number of sales so far closed, the prospects carried on their lists and the fact that the factories are not right up-to-date on deliveries even so early in the season as this.

Winton Motor Carriage Company, Seventieth and Broadway, Winton,

The difficulty now being experienced is that the threatened surplus of last year colored the vision of the agents in asking for allotments this year and the business this year, while not much different in volume from what it was in 1910, is so much better than was expected that many of the dealers fear that they reefed their sails a little too soon.

However, most of the agencies have sliding agreements so that it will be possible for them to get more cars than their allotments called for in the event of their needing them.

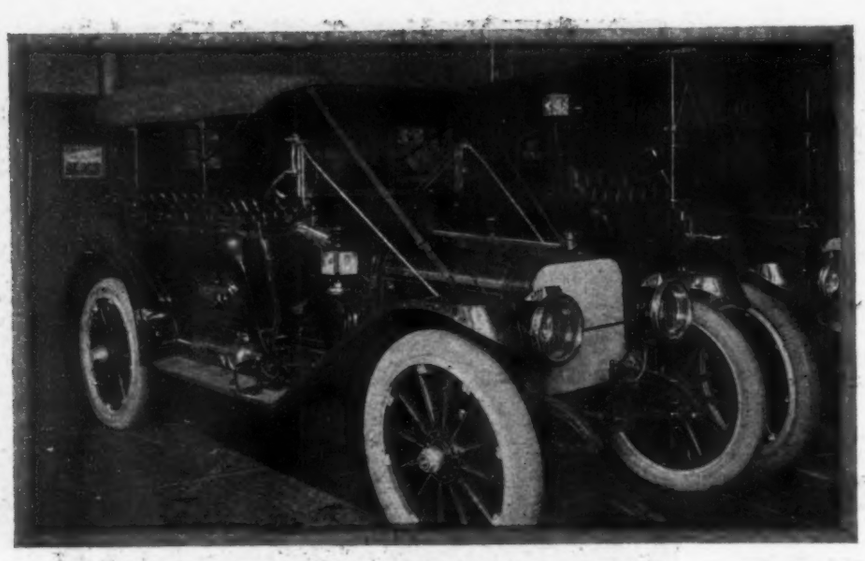
The factories are better prepared to shift gears than ever before since the automobile became a live factor in the commerce of the world. At present every maker of automobiles is exerting every effort to turn out his finished product, but it is perfectly possible to put on the brakes over night if the contingency should arise.

While business in New York is subject to all the influences that general trade is affected by elsewhere, Automobile "Row" is peculiarly fitted to mark the fluctuations of commerce in the metropolis and to act as an indicator of the trend of trade all over the country.

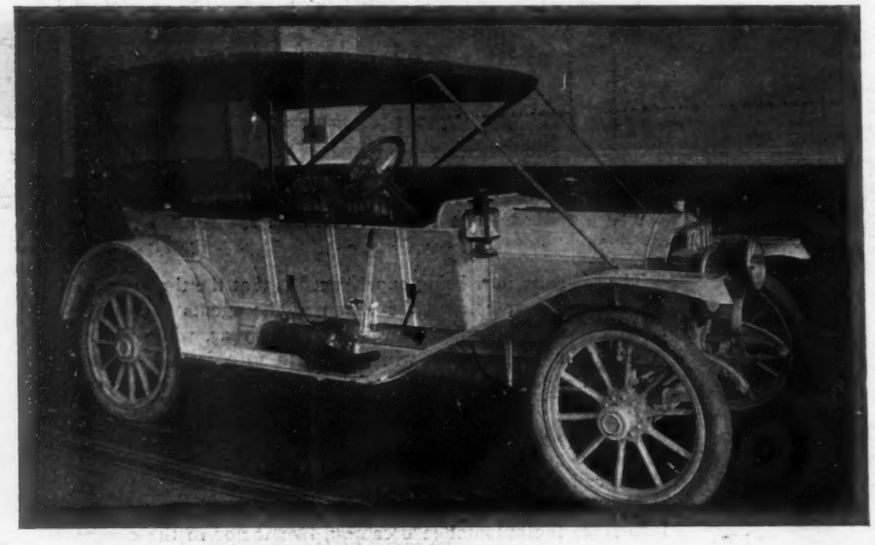
Curiously enough, this does not take the form of following the volume of sales very closely, but is shown most clearly in the facility or difficulty with which sales are made. When general trade is bad and money is tight, the actual sale of automobiles may not show any notable difference from that which obtains under normal conditions, but with the first indication of a backset to trade the "Row" finds it requires about ten times the amount of persuasion and salesmanship to close a sale.

When the purse-strings of general business relax, it does not mean that there is always a flood of buying orders, but simply that it is vastly easier to close sales. Naturally enough, business is better along the "Row" when financial conditions are sound.

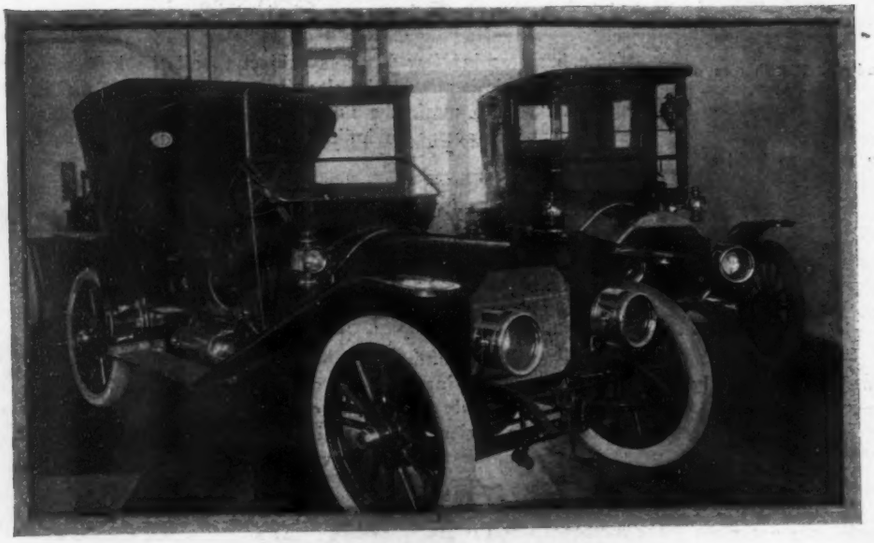
It is a big, fine red-blooded business, firmly established in the metropolis and it is destined to grow mightily and wax more important with each passing season.



Corbin Motor Vehicle Corporation, 1888 Broadway, Corbin.



Sidney B. Bowman Automobile Co., 1661 Broadway, Marmon and Apperson.



Whiting Motor Company, 1802 Broadway, Mercer and Cunningham.

"Row" in Detail

THE south end of New York's Automobile Row rests on Forty-seventh street, where it intersects Broadway. Within the memory of the present generation the section now occupied by scores of automobile salesrooms was a residential district. It was thought to be too far uptown for profitable retail business and too close to the heart of the city's commerce to rank high as a place for residence.

The vogue of the automobile came along at exactly the right time to save this section of the city from innocuous desuetude.

The demand for show rooms came gradually and the pressure was exerted along the line of least resistance. One by one the second rate apartments and boarding houses moved out and their places were taken by representatives of the lusty young automobile business. Today for a stretch of a mile and a half both sides of Broadway are dotted with sales agencies. In some of the blocks there are as many as eight establishments, and the other industries represented are frequently occupied by accessory salesrooms of one kind or another.

Approaching Automobile Row from the south, the first establishment to be found is that of the American Automobile Company, 1572 Broadway. This company handles a line of American cars. These automobiles, which are made in Indianapolis, are of limited production and the company caters to the class that can pay for exclusiveness.

The next shop is the home of the Crow, which is presided over by Otto F. Rost, general Eastern manager. The store is located at 1595 Broadway. Mr. Rost's territory includes everything east of Ohio and north of Virginia and all export business. The Crow car is a comparative stranger about the metropolis, as its sales have never been pressed locally before this season. The agency was established in 1909 and the first year was devoted to laying the groundwork of a selling campaign. The next year 53 cars were exported and 110 were distributed to territorial agents. No definite allotment has been made for this year, but a feature of local retail trade will be made, according to Mr. Rost. He is the only general manager in this territory who makes a practice of personally driving his car in track races.

Next door to the Crow establishment,

Résumé of the Establishments That Make Up New York's Great Automobile Business Highway

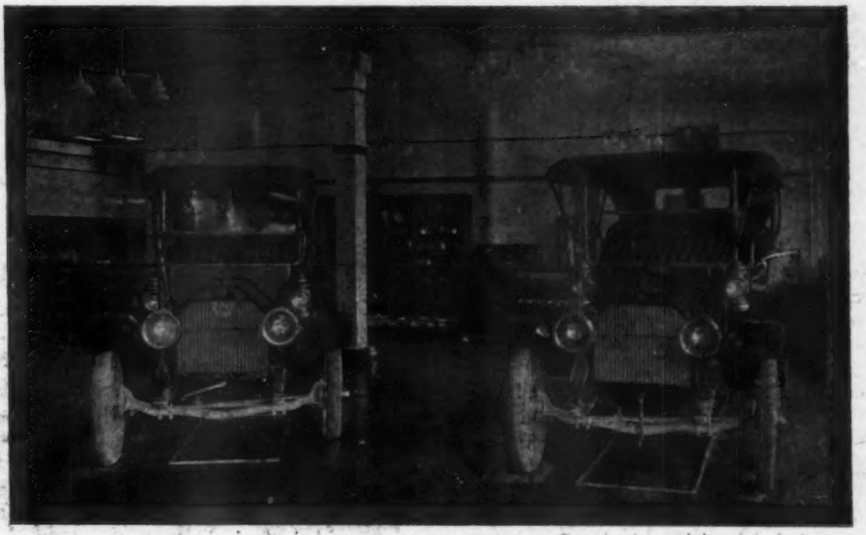
at 1597 Broadway, is located the show rooms of C. R. Teaboldt & Company. Mr. Teaboldt handles the Everitt "30" pleasure cars and delivery wagons and the big-wheeled Owen, or R-O car. The Everitt line is produced by the Metzger Motor Car Company, of Detroit, Mich., and is shown in several models. The Owen has little competition in its peculiar field, being distinct in several respects from other automobiles. Until a short time ago the Bergdoll line was also included among the wares of the Teaboldt company, but recently it has been removed to the Midland agency, 1851 Broadway.

The Overland Sales Company, 1599 Broadway, is the next store on the Row. This popular-priced car is exhibited in all its numerous styles and models in commodious quarters. The business done by the Overland in New York is large. The car was formerly handled by Charles E. Riess & Co., but upon the separation of the Overland from the Marion sales department the present company took hold of the distribution of the car.

Across the street, about midway of the next block, is the beautiful show room and offices of the Palmer & Singer Manufacturing Company. This is at 1620 Broadway. The New York store is the sales headquarters for the company, which has been making and distributing automobiles for four years. The volume of business in 1908 was 75 cars; in 1909, 125 cars; in 1910, 200 cars, and for the current season the estimate is for 250 cars. Both four-cylinder and six-cylinder models are sold.

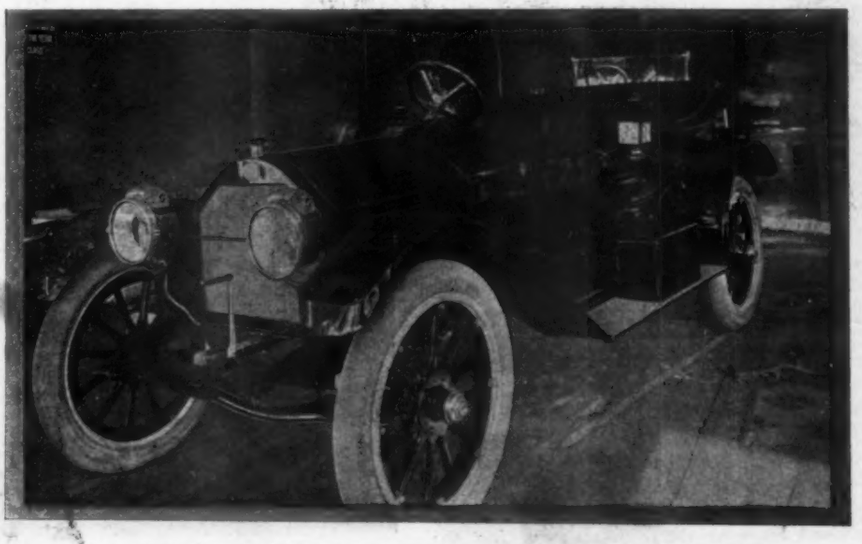
At the southwest corner of Fiftieth street and Broadway is the establishment of Carl H. Page & Co., who handle the Chalmers line. This agency was founded in 1908 and has grown into a commanding position in the metropolitan trade during the four years that have followed. The 1908 allotment to the New York concern consisted of 350 cars, all of which were marketed. Some idea of the volume of trade done by the Page company may be gained from the estimate for the present season. The company, according to official statement, has contracted for 1,000 Chalmers cars of 30 horsepower and 250 cars of 40 horsepower. According to list prices this amount of business would exceed $2,000,000 in 1911.

The De Dion Bouton American headquarters is the only automobile store in the next block north. This branch of the



Studebaker Bros., Fifty-ninth and Broadway, Studebaker, E-M-F and Flanders.

Moon Motor Car Company, Fifty-eighth and Broadway, branch house for the Moon line.



Colt, Stratton Company, 200 Broadway, handling the Cole "30."

French factory is presided over by E. Lescaris.

Above Fifty-first street the stores come thick and fast. The first to be reached on the left side of the street going north is the home of the Oldsmobile, 1653 Broadway. This company is incorporated and its chief officers are Cutting and Larson, two well-known members of the selling fraternity. This agency was established in 1906 and is not a factory branch. The progress of the art is nowhere better illustrated than in the development of this line from the old curved-dash runabout to the modern Limited.

The Short & Wright Company, Incorporated, 1650 Broadway, handles a big line of new cars. The large store of this company is almost across the street from the Oldsmobile. Mr. Wright is the chief owner of the business and is one of the optimistic spirits of the Row. He is well stocked with cars and anticipates lively trade this Spring. The line carried in this establishment consists of the Michigan, for which the company has contracted for 500 cars; the Staver, the allotment for which is 200 cars; the Babcock gasoline car, 150, and the Lion, 50 cars. Last year the Michigan and Lion were not factors in the local situation, and Mr. Wright stated that the allotment of Stavers was 100 and of Babcocks 50.

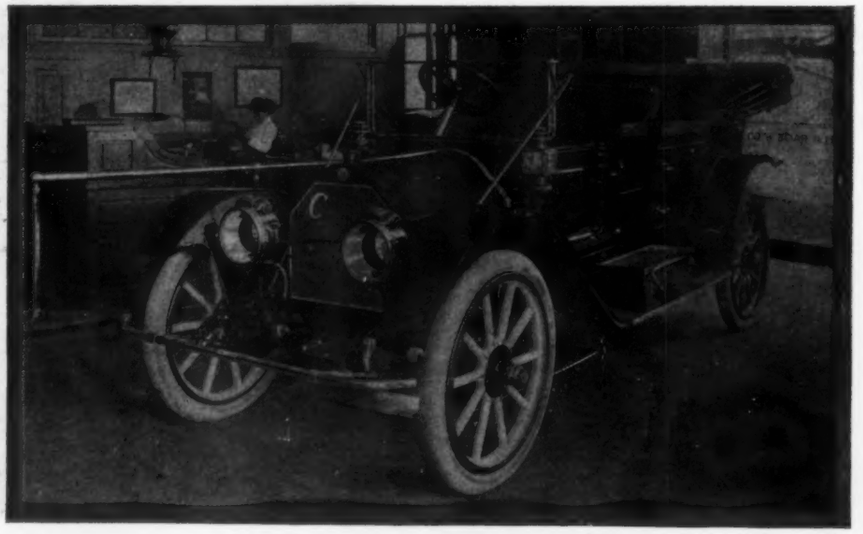
At 1657 Broadway is the Garland Automobile Company, agency for the Velie and Speedwell lines. Last year this company contracted for 50 cars of each make, but for the season of 1911 the allotments of Velies is 300 and a lively business is reported. The Velie car was very prominently displayed at the late automobile show at the Grand Central Palace and has been an active sale ever since. The Speedwell contract for this season is 75 cars, according to the management of this concern.

Next door but one to the north from the Garland headquarters is the Sidney B. Bowman Automobile Company, at 1661 Broadway. The Bowman company handles the Marmon as its feature. It also sells the Apperson and the Clement-Bayard. The growth of the Marmon business in New York covers a period of three years, commencing in 1909 with 30 cars sold. In 1910 50 automobiles were disposed of, and this year the allotment is 100. The history of this company dates back to 1902, when it handled the old Kensington electric. Later it took on the Clement, Orient, Thomas, and finally the Apperson and Marmon.

The Oakland Motor Car Company, 1650 Broadway, is between the two preceding establishments. This concern, which is officially the Shepherd Motor Car Company, commenced to sell the Oakland line in 1908, when it contracted for 100 cars. The next year it doubled its allotment, and in 1910 the contract was for 300 cars. The estimate as made by the man-

Peerless Motor Car Company, 1758 Broadway, Peerless.

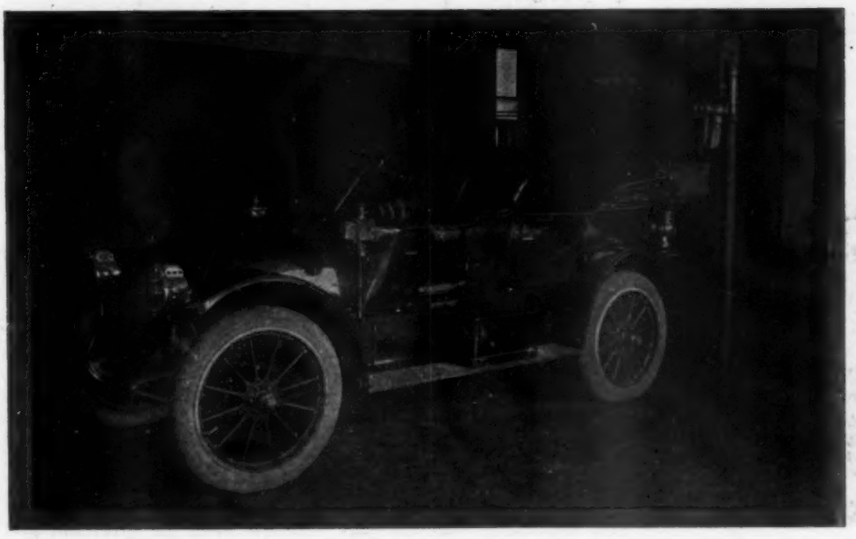
A. Elliott Ranney, 1928 Broadway, where the Hudson line is sold.



Carl H. Page and Company, 1627 Broadway, Chalmers.

Garland Automobile Company, 1657 Broadway, Velie and Speedwell.

Locomobile Company of America, Seventy-sixth and Broadway, Locomobile.



Franklin Automobile Company, Seventy-second and Amsterdam Avenue, Franklin.

agement for this year is for 50 cars.

On the same side of the street and just north of the Marmon agency comes that of the Jackson Automobile Company, 1663 Broadway. The Jackson cars are handled by C. W. Oathout, Eastern distributing agent of the company. The enterprise was organized in 1907 and has enjoyed a steady growth since its inception.

Crossing Broadway and trending backward about midway of the block is the headquarters of the newly formed Eastern Distributing Agency of the Consolidated Motor Car Company at 1662 Broadway. This company sells the Croxton line of taxicabs and pleasure cars and in the near future will handle the Royal Tourist and the product of the Acme Veneer Body Company. The estimate on the number of Croxtons to be sold this season is 225. The agency was instituted in 1908, when 25 cars were contracted for. J. P. Stoltz, vice-president of the Consolidated, is in charge of the agency. The number of Royal Tourists to be taken has not been fixed.

At the corner above is the new quarters of the Abbott-Detroit Motor Company and the Regal Sales Company, the street number being 1670. The Regal was formerly handled by the recently discontinued Regal branch house and the Abbott is a comparative stranger. The 1911 allotment to this concern is 500 cars.

H. J. Koehler, 1709 Broadway, is the distributor of the Hupmobile. This agency controls a very wide territory, consisting of New York, New England, New Jersey and part of Pennsylvania. The line this year is the standard runabout, touring car and delivery wagon. The sale of Hupmobiles in the East commenced in 1909, when 250 were ordered by the agents. In 1910 1,200 were distributed throughout the territory, which at that time was the same as this year with the exception of New Jersey. This year the allotment is 2,100 cars, which will be handled throughout this territory from the Broadway headquarters.

A few doors north of the Hupmobile agency, at 1715 Broadway, is the home of the Haynes Automobile Company, of which E. W. Headington has been president for three years. This concern was started in 1906, when 35 cars were contracted for. In 1910 303 cars were sold, and while the allotment, according to Mr. Headington, is 500 for this year, the recent fire at the Haynes factory at Kokomo, Ind., may delay or prevent delivery of the full number. The territory covered by this selling company is New York, New England and New Jersey.

At the corner of Fifty-fourth street and Broadway is the establishment of W. P. Mallon, who handles the Krit and Paterson in a territory comprising thirteen States. About 800 Krits were ordered in 1910, and the allotment for the present year is said to be slightly larger. A

considerable proportion of the business in this line is transacted through subagencies. The Paterson territory is somewhat smaller than that of the Krit and the allotment is 400 cars for 1911.

Just back of the corner of Fifty-fourth street, at No. 233, is the agency of the Pierce-Arrow. The business of this concern is one of the pioneers in the automobile line in New York and elsewhere on the American continent. The car is one of the highest priced in American motordom and has an extensive metropolitan patronage.

The Elmore Motor Car Company's New York headquarters are at 229 West Fifty-fourth street, just off Broadway. The Elmore and its two-cycle motor have been actively pushed by the company and have made an excellent relative showing in the metropolitan field.

The Peerless Motor Car Company, 1758 Broadway, has one of the handsomest show rooms on the "Row." This company started business in New York in 1905, when it had an allotment of 50 cars. These found market, and the business has grown steadily each year until the contract for the current year is for 350 cars. The Peerless has a wide patronage among the wealthy section of New York.

R. M. Owen & Co., 1759 Broadway, handle the Reo and Premier on an extensive scale. The Reo ranks as the pioneer of the line and has been sold in New York since 1905 in increasing numbers. The Premier was taken on in 1907. The company's domicile is Lansing, Mich.

Wyckoff, Church & Partridge, incorporated, Fifty-sixth and Broadway, lately the selling concern in the metropolitan field for the F. B. Stearns Company, of Cleveland, are now handling the Commer truck and in the immediate future will afford a general market for the Guy Vaughn pleasure car. This car, which is being manufactured at Kingston, N. Y., is being carefully groomed for its début in New York and will be pushed vigorously by this compact and well-knitted sales organization. The company is equipped to carry on a big trade. Under its activity Stearns sales were increased from nothing in 1906, when the agency of the car was assumed, to a maximum last year.

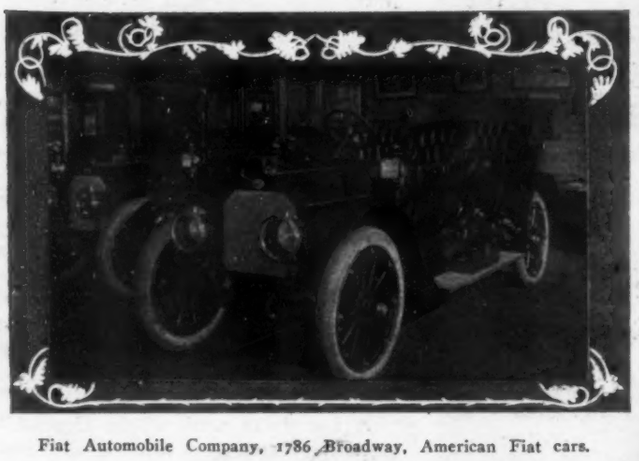
The Ford Motor Company, presided over by Gaston Plaintiff, at 1723 Broadway, has been doing business in its present form since 1905. The volume of Ford business is large and constantly growing.

The Lozier Motor Car Company, Fifty-sixth street and Broadway, is the Eastern distributing branch for the Lozier line. It was installed March 1, when the general offices of the company were removed to the factory at Detroit. The territory over which this branch holds sway consists of New York, New Jersey, Washington and Philadelphia. W. S. M. Mead is in charge of the branch. The allotment of Loziers to this territory for 1911 is estimated at 175, but may be expanded.

The Stoddard-Dayton Motor Car Company, 227 West Fifty-seventh street, handles the Stoddard-Dayton line. This car has found an increasing market in the metropolis and is accounted one of the most popular of the high-grade, moderate priced automobiles represented in New York.

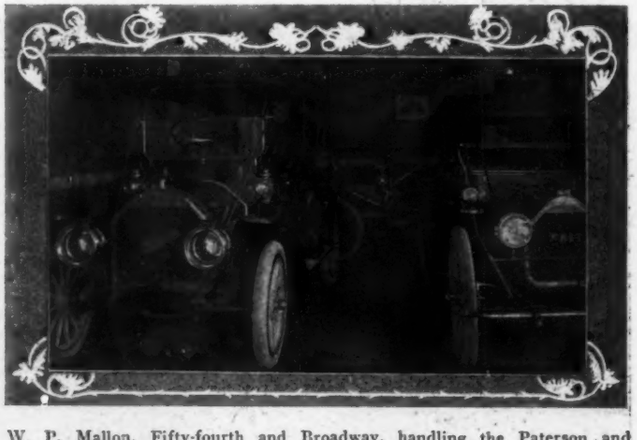
The F. B. Stearns Company, of New York, Fifty-seventh street and Broadway. This company has just assumed charge of the sales of Stearns cars in New York. The new salesrooms are prominently situated and are in charge of W. Arthur Lesser and a crew of experts. The allotment for this year for the metropolitan district alone is estimated at 250 cars.

Charles E. Riess & Co., 1776 Broadway, directly across the street from the new Stearns agency, handle the Marion, Selden and Imperial. This company formerly sold the Overland and Marion on a broad scale. The Marion, which is the sales feature



Fiat Automobile Company, 1786 Broadway, American Fiat cars.

Where the Paige-Detroit and Colby cars are sold at 1800 Broadway.

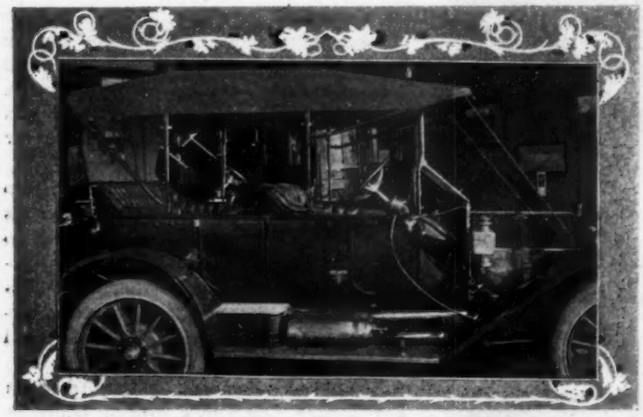


W. P. Mallon, Fifty-fourth and Broadway, handling the Paterson and Krit lines.

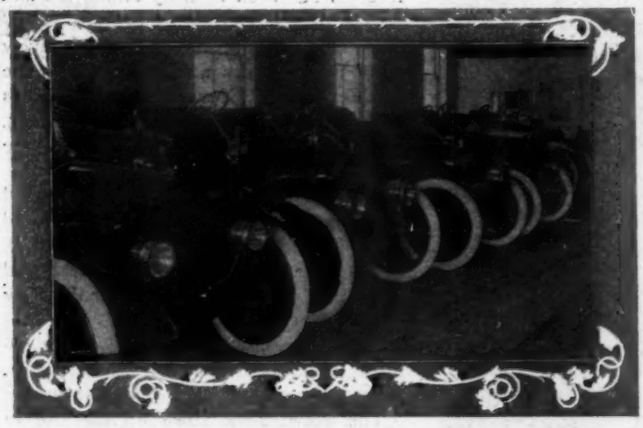
Croxton Motor Company, 1662 Broadway, where Croxton and Royal Tourist cars are handled.

of the company for this year, has been sold in New York for four years. In 1908 only 20 cars were disposed of; in 1909 the allotment was increased to 50. Last year the total was swelled to 250, and this year the estimated business is 700 cars.

Just above Fifty-seventh street is the Fiat Automobile Company, whose American factory at Poughkeepsie, N. Y., is expected to supply it with an allotment of 200 cars during the selling season of 1911. E. R. Hollender, one of the foremost advocates of automobile racing and competition, is at the head of the project. In addition to the American cars, the company will import quite a number of Italian made automobiles.



Haynes Automobile Company, 1715 Broadway, Haynes Cars.

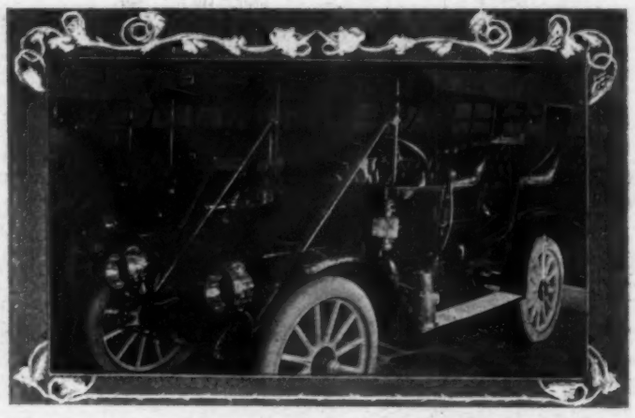


Short and Wright (Inc.), 1650 Broadway, Michigan, Staver, Babcock and Lion cars.

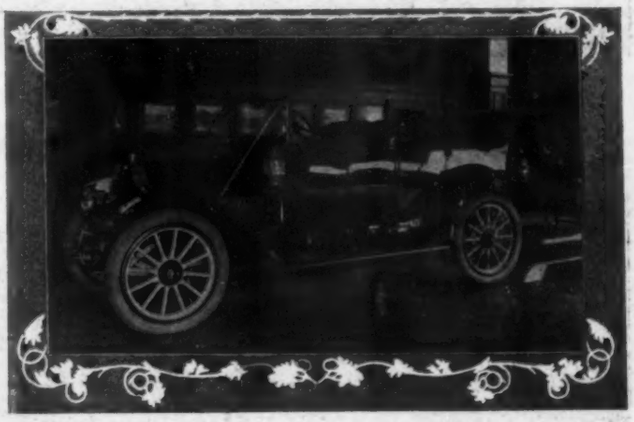
S. J. Wise & Co., 1794 Broadway, handle the Amplex valveless motor car and the Rauch and Lang electric. The Amplex has been on the market for three years, starting in 1909 with an allotment of 10 cars. That year, according to Mr. Wise, 64 cars were sold. In 1910 the allotment was 75 cars, and this year the estimated business is 150 cars.

The Moon Motor Car Company's New York headquarters are located on Fifty-eighth street, just off Broadway. The territory covered by this concern includes New York, New Jersey and Connecticut, and is in charge of W. J. Coghlan as sales manager. Earl J. Moon makes New York his headquarters in supervising this important territory. The Moon line has been marketed in New York since 1909, when 65 cars were distributed. This year the estimated business will be 250 cars. The Moon is a lively seller and Mr. Coghlan, who formerly was agent for the Chadwick at Philadelphia, expects to have a good year.

The Henry Motor Car Company, 1849 Broadway, made its metropolitan bow this season. The territory of this agency includes New York, New Jersey and Connecticut, and the management expects to do a considerable volume of business.



R. M. Owen & Co., 1759 Broadway, Reo and Premier lines.



E. R. Thomas Motor Company, Sixty-third and Broadway, Thomas Flyer.

The new S. G. V. car, made at Reading, Pa., is handled by the Gotham Motor Company, at 1853 Broadway. This car is moving well for a beginner and the company has been allotted 150 cars.

The Midland, Correja and Bergdoll are the trio handled by J. Mora Boyle at 1855 Broadway.

The Empire City Automobile Company, 1800 Broadway, handles the Colby and Paige-Detroit cars, both new to New York. The Paige line was introduced last year, but too late in the season to prove much of a factor. This year 150 Paige cars and 100 Colbys will center the attention of this company in the selling line. Early indications seem favorable to a profitable first year's business.

The Whiting Motor Company is at 1802 Broadway. This concern sells the Mercer and Cunningham.

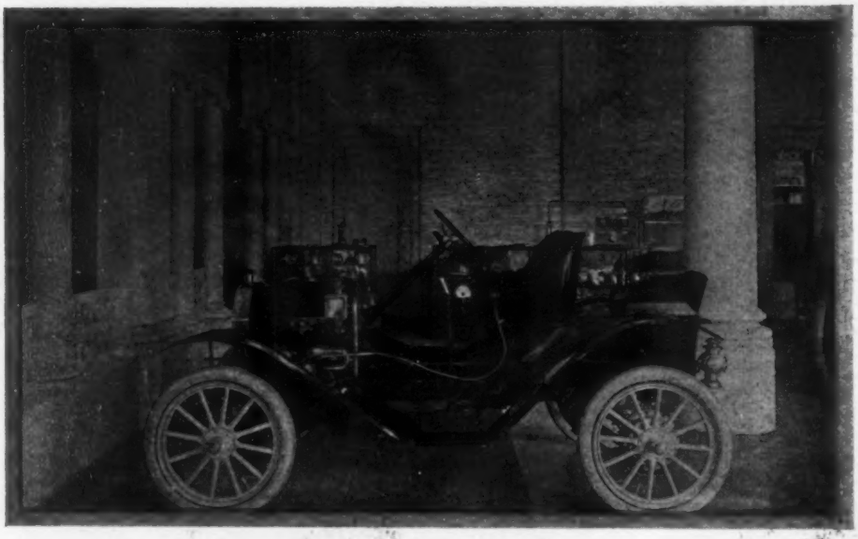
Studebaker Brothers Company, of New York, has a big store at Fifty-ninth street and Broadway. This company sells the Studebaker "40," E-M-F "30" and Flanders "20." The allotment for this year consists of 150 Flanders and 250 E-M-F's.

The Cadillac Motor Car Company is located on the left-hand side of the street, at the entrance to Columbus Circle, the street number being 1819 Broadway. This concern has handled the Cadillac car for years under the direction of I. M. Uppercu.

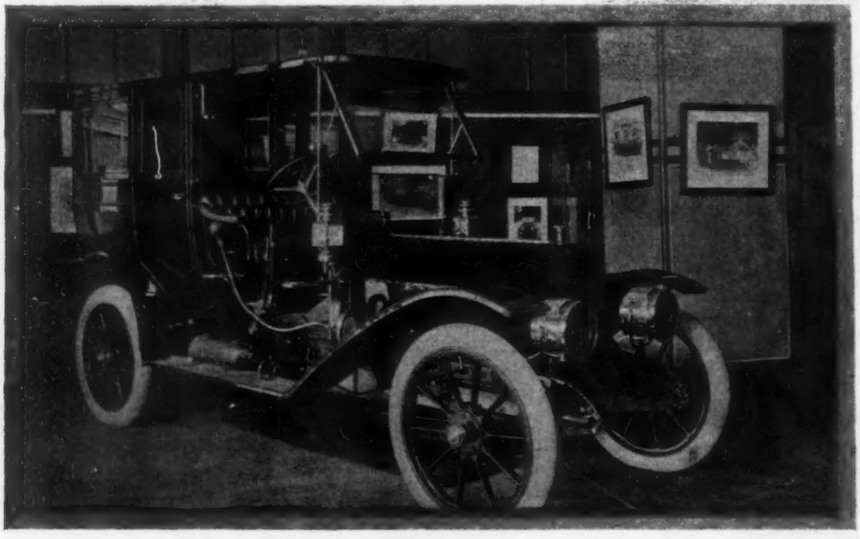
United States Motor Company, Sixty-first street and Broadway. This great company handles the sales of the Maxwell, Columbia and Sampson lines directly from its headquarters. Colonel K. M. Pardee is actively in charge of the sales. The whole vast machinery of the company is conveniently located to aid sales in this territory and business is consequently lively.

The Pullman line is handled by Cimiotti Brothers.

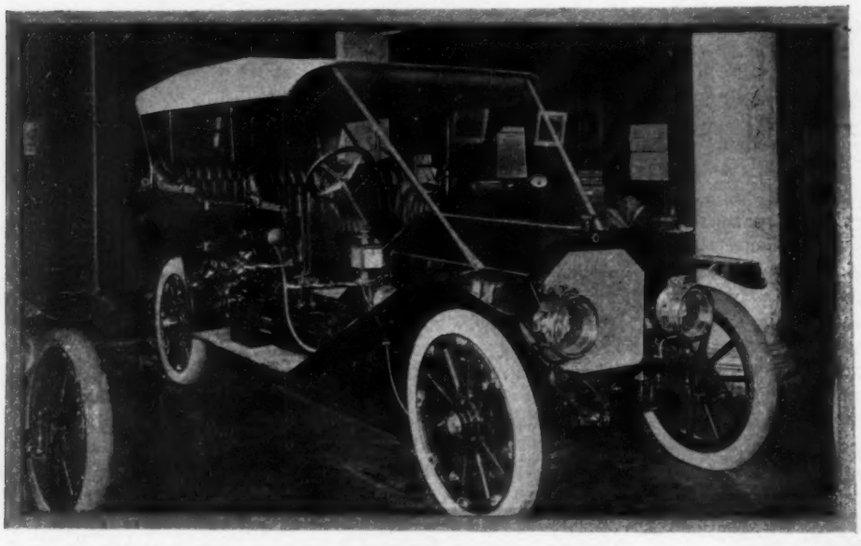
One of the handsomest and most commodious show rooms in New York or elsewhere is that of the Packard Motor Car Company, at Sixty-first and Broadway. The cars are displayed



John Moore & Company, 2010 Broadway, agents for the Brush runabout



Matheson Automobile Company, Sixty-second St. and Broadway, Matheson.



Palmer & Singer, 1620 Broadway, Palmer-Singer

to much advantage amid the luxurious surroundings. Mr. Budlong, president of the New York company, is one of the most active figures in the trade. It is said that the Packard allotment for 1911 is already cared for, but efforts are being made to secure more cars. The Packard agents enjoy a wide custom in New York. The allotment this year is said to have been 400 cars.

The distribution headquarters of the Simplex Automobile Company is at 1862 Broadway. Mr. Dale, who is in charge, stated that the allotment last year was 270 cars, and that it is slightly more for 1911.

The Mitchell Motor Car Company, 1876 Broadway, is cramped for room in its present quarters and has arranged to move across the street to larger rooms before next Fall. The allotment of this company for 1911 consists of 500 cars, according to official advices. The Mitchell trade in New York is increasing.

The Alco is handled by the American Locomotive Company's branch house at Sixty-second street and Broadway. This location has been recently remodeled and is one of the fine stores of the "Row." The Alco production is comparatively small and its sales field is limited to the wealthy class. Nevertheless, the sales have shown a distinct increase since 1905, when the car was first presented to the public.

The White Company, Sixty-second street and Broadway, is favorably situated as to its show room, where the full line of gasoline pleasure cars, steamers and trucks are on display. This year the New York company will handle 250 White "40" gasoline cars and 200 trucks. The allotment of steamers is indefinite. R. H. Johnston is at the head of the business.

The New York store of the Corbin Motor Vehicle Corporation is at 1888 Broadway.

The E. R. Thomas Motor Company has a magnificent salesroom at Sixty-third and Broadway. Spring business is lively and every car that can be secured from the factory is in demand. It is estimated that sales will show a considerable increase over those of last year.

The Matheson Automobile Company is well located at Sixty-second street and Broadway, where a full line of its six- and four-cylinder cars are displayed and sold.

The Rainier Motor Company, Sixty-fourth street and Broadway, has recently been taken over by General Motors, according to announcement of the management. The car has always had a select patronage in New York and the present plans are said to contemplate a more vigorous selling campaign.

A. Elliott Ranney, 1928 Broadway, is the selling agent of the Hudson in New York. This company is one of the busiest ones on the "Row" and each year marks

a new record of sales. Progress has been conspicuous during the past two years and Spring business is already at full swing.

Next door north is the local agency of the Pope-Hartford line.

The Poertner Motor Car Company, 1922 Broadway, handling the National, is one of the most popular agencies in New York. W. C. Poertner, president of the company, is a veteran in the automobile business despite his youth, and the wide metropolitan market of the National line indicates the activity of his organization in the trade.

Under the personal handling of William Marvin Gage, general manager, the Carhartt car is being introduced to the New York public from its new quarters at 1989 Broadway. The former salesroom of the company was at the Plaza Hotel and the change to the new quarters was made recently. Mr. Gage is optimistic as to the future of the industry and particularly so with regard to the car he is handling.

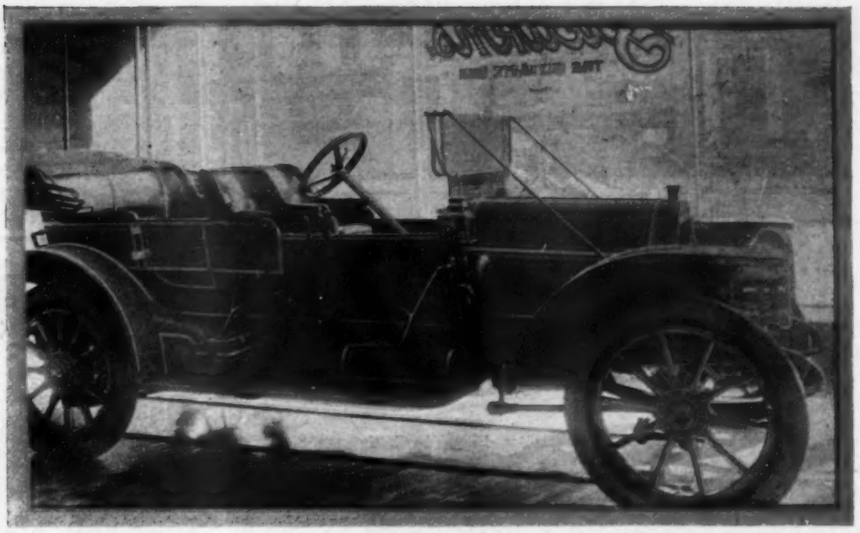
The home of the Winton Motor Carriage Company at Seventieth street and Broadway is a beautiful salesroom with a large exposure on the White Way. The Winton is one of the veterans of the "Row," the selling department in New York having been conducted as a branch house since 1905 and an agency for several years before that time. Mr. Brown, who is in charge, is an enthusiast about his line and the men who are associated with him are among the most active in automobile salesmanship in the metropolis. Winton patronage is large and of high class.

The Otto Motor Car Company, handling the Otto car at 1964 Broadway, has made considerable strides during the past year. Hitherto the effort to retail the car in New York has not been insistent, but this year the company is pushing this end of the business with vigor.

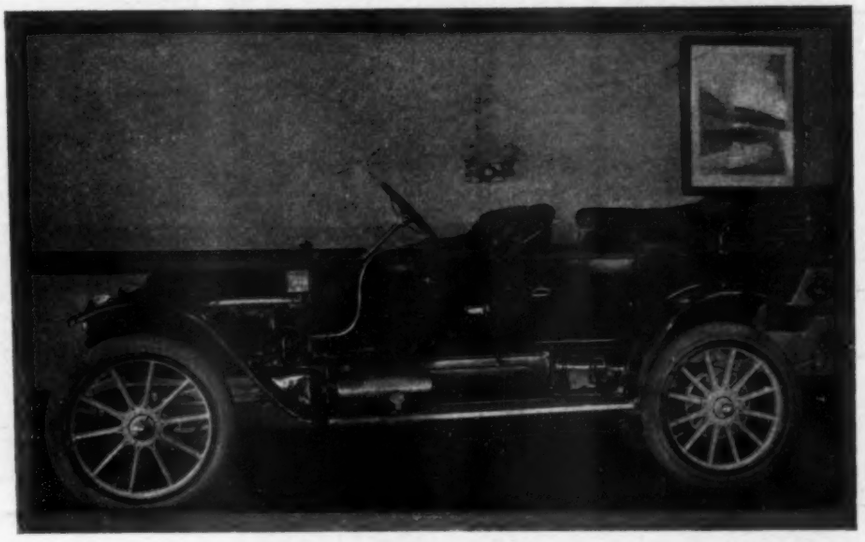
Next to the Otto establishment is the New York store of the Knox Automobile Company, 1966 Broadway. This company has long been represented in New York with its high-grade line of New England cars. The Knox company has a fine show room and a well-trained corps of salesmen.

The Lexington Automobile Company, 1995 Broadway, is one of the recently established stores of the "Row." This car has been growing in popularity in the West and has gained a foothold in New York that is promising of a profitable business this season.

The Case car, formerly known as the Pierce-Racine, manufactured by the J. I. Case Threshing Machine Company of Racine, Wis., is sold from 1934 Broadway. The selling of the Case in other sections of the country has been aggressive and the New York agency is expected to keep up with the pace set elsewhere.

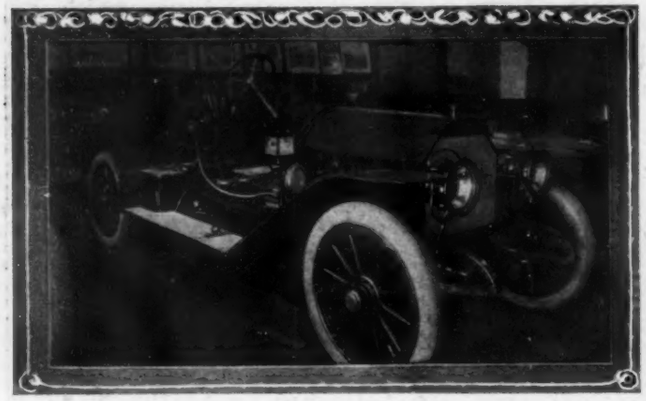


F. B. Stearns Company, Fifty-seventh and Broadway, Stearns

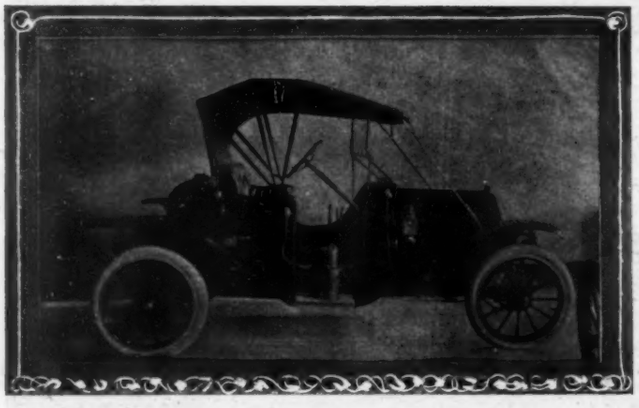


The White Company, Sixty-second and Broadway, White cars and trucks

Poertner Motor Car Company, 1922 Broadway, National



Simplex Automobile Company, 1862 Broadway, distributing the Simplex.



Henry Motor Car Company, 1849 Broadway, Henry roadsters and touring cars.

The Colt-Stratton Company, New York, distributors of the Cole "30," is located at 2000 Broadway. This concern really started to do business with the car on a considerable scale in 1910, when 208 were sold. Trade was lively and the allotment was more than filled. This season an order for 700 cars has been filed with the factory.

At Seventy-second street and Amsterdam avenue, facing Broadway, is the establishment of the Franklin. This line is about as well known as any in the metropolis and since its installation in New York it has proved exceedingly popular. H. R. Bliss, district manager for the factory, is accounted one of the most efficient automobile salesmen in New York. He has schooled his force in all the fine points claimed for his line, such as lightness, air-cooled motor, big tires and exact mechanical adjustments. Franklin business is large and growing. The new style of hood has been welcomed by the New York public.

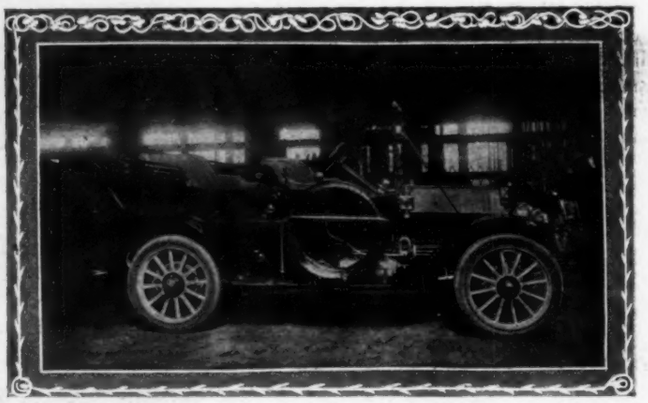
The Brush runabout, one of the sturdiest low-priced cars on the American market and the equal of many larger automobiles in speed and stamina, is handled in New York by John Moore & Company, 2010 Broadway. The Brush has a world-wide reputation and enjoys a large market here and elsewhere.

The friction-drive Cartercar is handled at 2178 Broadway by the Cartercar Company.

The "Farthest North" on the "Row" is the big, busy establishment of the Locomobile Company of America at Seventy-sixth street and Broadway. The Locomobile is closely associated with the development of the motor car in America and has been before the public ever since the public took an interest in motoring. As everyone knows it is a big, graceful car, carefully made in New England without special reference to price. The volume of business reckoned in cars is not as large as that of a number of other lines where prices are lower, but in money terms it ranks high in receipts.

The "Row" thus considered is thirty city blocks long and the stores covered are included among those that front upon Broadway in addition to those located within a short distance of that great trade artery upon the cross streets.

The range of prices that one may pay for new cars is from less than $500 to more than $15,000 and models of each of the kinds referred to may be seen in stock along the "Row." Also, every possible gradation of price and size that lies between



Mitchell Motor Company, 1876 Broadway, showing Mitchell shop.

H. J. Koehler, 1709 Broadway, distributors of the Hupmobile in the East.

these extremes may be had for the buying. There are 166 different styles of runabouts, 124 types of touring cars, 73 different limousines and closed body styles and 18 utility wagons, besides a host of light delivery cars susceptible to be fitted to the regular runabout or touring chassis.

There are a few racing bodies and many stripped chassis in regular stock and if the buyer happens to have unusual ideas as to the car of his fancy all he has to do is to describe what he wants and the New York automobile salesman will fill it or break something trying.

From the Buyer's Viewpoint

The "Row" as It Concerns the Man Who Makes It Possible

METROPOLITAN motordom buys 21,000 new automobiles annually. The figure cited represents only the gasoline pleasure vehicles needed to supply the tremendous demand of New York alone. The total bill amounts to about $42,000,000.

There is a large class in New York that only uses an automobile regularly for a single season. At the end of one year the car is relegated to the second line of defense and its position

is taken by some newer fancy in the line of a motor car. At the end of the second year it is moved back to the "reserves" and when three summers have passed it goes to the second-hand man, if it has managed to remain in the possession of the original purchaser that long.

The usual method of buying a car is a little different here than it is elsewhere in the land. There is a constant striving for novelty, and along with the novelty the New York buyer demands speed, reliability and comfort. Many novelties come to the surface momentarily during a season and then sink out of sight because they do not carry the other requisites in the correct proportions.

The New York buyer gets his ideas of the style of cars he wishes from a variety of sources. The mechanism, style, price and performance of all the standard makes is a live subject of discussion at the clubs and many a buyer has prepared himself to purchase a certain make of car from participating in analytical discussions in the sacred precincts of his club, where such a person as an automobile salesman never has a chance to enter.

Primed with the opinions of his friends and his own conclusions drawn from them, and other sources of information, he frequently avoids the place where the particular car he is considering is sold. But in some mysterious way the information that he feels favorable to a certain kind of automobile does leak out and generally reaches the establishment where the car is handled sooner or later. The sales manager has learned not to

American Locomotive Company, Sixty-second and Broadway, the Alco line.

Oldsmobile Company of New York, 1652 Broadway, Oldsmobiles.

make the mistake of approaching the prospect directly upon learning of his leaning toward the car sold in his establishment.

He uses almost uncanny skill and diplomacy in arranging a "chance" interview with the clubman and the record of sales in New York shows that an astonishing percentage of sales are consummated, which have their basis in similar conditions.

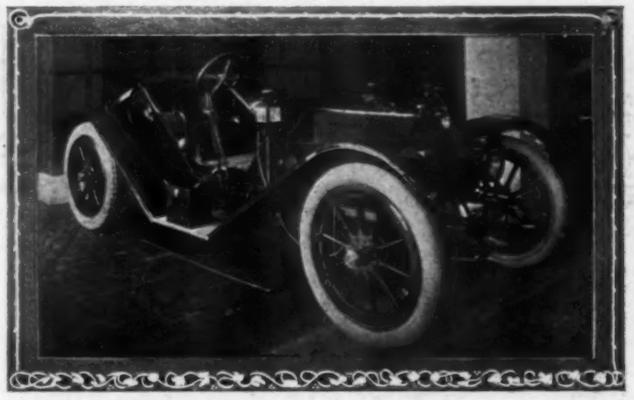
All the clubs are subscribers to the leading technical magazines and the conclusions reached in the informal discussion of motor car merit are astoundingly correct from the mechanical and utilitarian viewpoint. The theory of the car as set forth in the magazine and the record of its performances, coupled with the actual experience of the clubmen in handling the car, form a solid ground from which they can proceed to a conlusion that has much merit in it.

Personal solicitation and circularization have both good and bad points from the viewpoint of both buyer and seller. The circular is a most uncertain means of reaching the right people, as butlers and janitors have a marvelous discrimination in picking out this class of literature and consigning it to the ash-cans before it is ever read. A small percentage of such literature does reach its destination, but it is too small and hazardous to rest much faith upon.

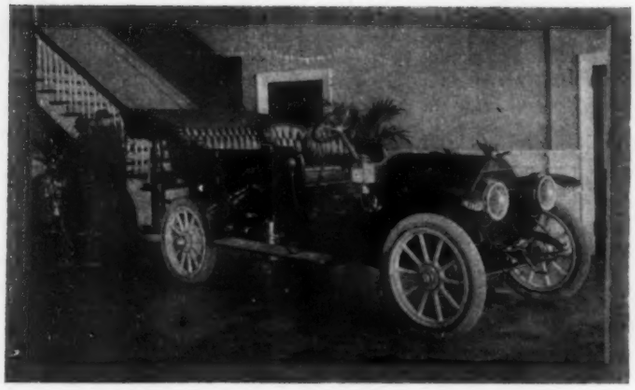
Solicitation is used more or less by all automobile salesmen. The men engaged in this line of industry can approach and meet the heads of professions and businesses and representative men of the leisure classes on an equal footing or they cannot prove much of a success in marketing automobiles. Much depends upon the presentation of the salesman's claims for his car and the schooling of the salesman must be very thorough and his natural ability must be large in order to win.

The humble necessary chauffeur is a distinct element in selling. Of course, the unknown or unreliable man has little influence with his employer as to the choice of a car, but it is an undeniable fact that when James or François, having been employed by an automobile owner for several years, suggests that a certain car is about the right thing for his employer to ride in it does have a certain weight. However, the influence of James or François is greater in a negative way than as a positive force. If he is a competent workman of keenness and observation his views are likely to be practical and valuable, particularly as to the faults he has observed in service.

Wyckoff, Church & Partridge (Inc.), Fifty-sixth and Broadway, Commer truck.

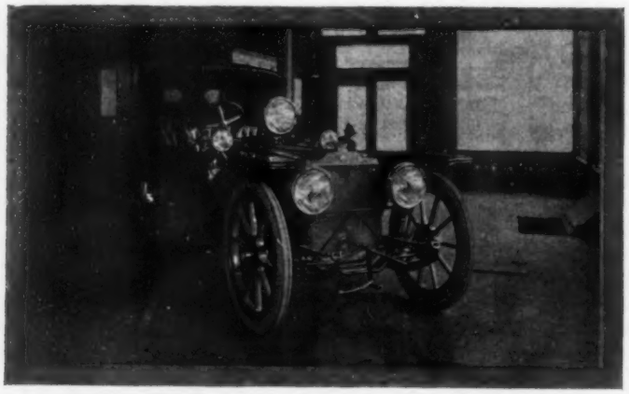


Gotham Motor Car Company, 1853 Broadway, New York home of the S. G. V.



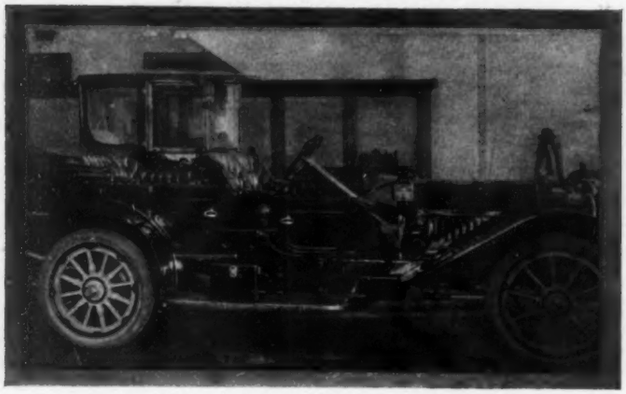
Cadillac Motor Car Company, 1819 Broadway, Cadillac.

Charles E. Riess & Co., 1776 Broadway, Marion, Selden and Empire.

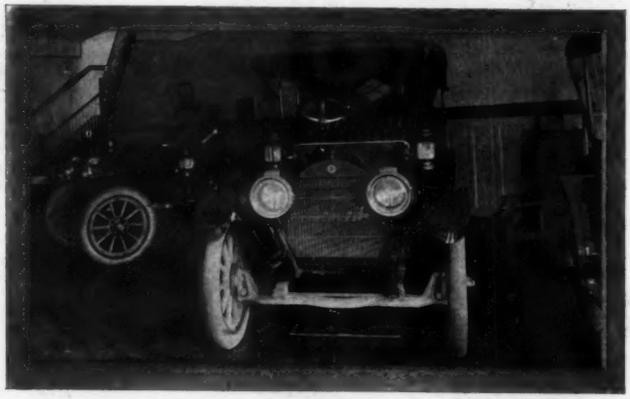


American Automobile Company, 1572 Broadway, American.

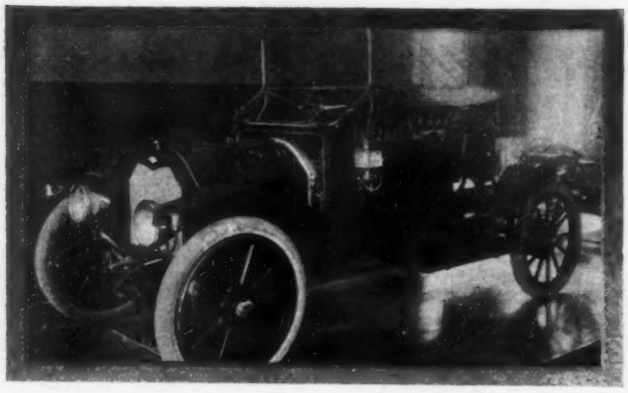
Otto F. Rost, 1595 Broadway, Crow.



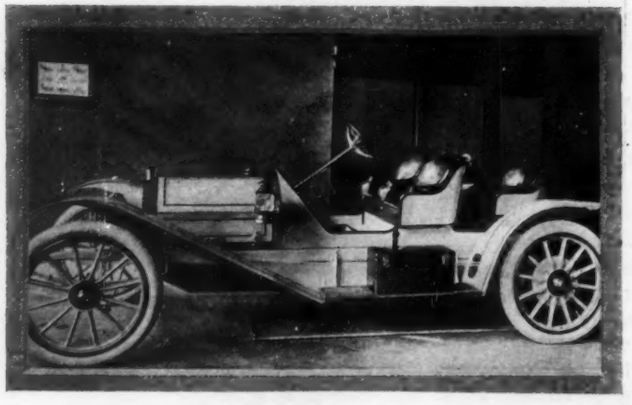
S. J. Wise & Co., 1794 Broadway, Amplex and Rauch & Lang electric.



Carhartt Automobile Sales Co., 1989 Broadway, Carhartt.



Abbott-Detroit Motor Co., 1670 Broadway, Abbott-Detroit and Regal.



Otto Motor Car Company, 1964 Broadway, Otto.

Questions That Arise

Some of Those That Come Up in Every-Day Automobiling Are Answered by the Matter Presented by Forrest R. Jones in the New Edition of the "Automobile Catechism"

[410]—What indication observable while driving the car may show that ignition is too late?

The circulating water may become so hot as to be converted into steam which, if there is any visible opening to the radiator, can be seen escaping. The exhaust pipe may become red hot near the engine.

[411]—What permanent injury may be caused by running with too late ignition for a considerable length of time?

The exhaust valve is apt to become pitted and warped so as to leak. The exhaust pipes may warp and leak where they connect to the engine casting.

[412]—How should the spark and throttle control be set when running a car at a uniform speed along a good, level road?

The throttle should be closed as much as possible in order to economize fuel and prevent undue heating of the engine, and the spark should be advanced as far as possible for satisfactory running of the engine.

[413]—If the spark is advanced too far when running, what bad result follows?

The combustion pressure will become too high in the cylinder before the piston has completed its compression stroke and offer so much resistance to it during the completion of the stroke as to produce heavy stresses in the crankshaft, which may be sufficient to break it.

[414]—What is an indication that the spark comes too early when running?

There will be a pounding sound (knocking) in the engine generally, and in a one-cylinder or two-cylinder engine an additional tremor may be given the car. In an engine with four or more cylinders that is new, with all parts snugly fitted, there may be no knock or other indication that is discernible, unless the spark is excessively advanced. Loss of power will always come with excess of advance, but not necessarily with the amount of advance that produces knocking in a somewhat worn engine, or even in a new engine of the single-cylinder or two-cylinder type.

[415]—If the spark and throttle are properly set when running at the legal rate on a level road, how would you manipulate them to climb a grade without losing speed?

Retard the spark slightly and open the throttle gradually, then advance the spark carefully up to the safe limit.

[416]—When the car slackens speed on an increasing grade, how do you throw the sliding gears from high speed to a slower speed?

Disengage the clutch, bring the gears to neutral position between high-speed and next to high-speed, increase the speed of the engine, throw in the clutch momentarily, disengage again, and bring the sliding gears quickly into the next to high-speed.

[417]—How would you adjust a carbureter which has a valve in the air inlet that it lifted against a spring (automatic air-valve) by the air when the throttle is open wide?

First make the preparation for starting the motor.

Set the gasoline (needle) valve of the carbureter to what is judged as about the proper opening. A quarter turn of the valve, or less, will generally answer for the first trial.

Set the automatic air-inlet valve about midway between its extreme adjustments.

Open the throttle one-quarter way, or less.

Prime the carbureter if there is any provision for so doing.

Set the spark control for late ignition.

Crank the motor several times. If it does not start and there is provision for priming the carbureter, partly close the air inlet of the carbureter while cranking. The air inlet can be thus partly closed by one's hand or a piece of flat metal. The air inlet should be left free as soon as the motor starts. Several trials at starting, with different settings of the throttle lever, should be made.

If the motor starts but runs only a few revolutions and no black smoke (not blue or blue-white) appears at the exhaust just before the motor stops, then open the regulating valve of the carbureter wider to let more gasoline into the air passage (to make a richer mixture). Crank the motor again as before.

If black smoke appears at the exhaust just before the motor stops, then slightly close the regulating valve of the carbureter. Crank as before. After the motor is started, adjust the regulating valve of the carbureter to obtain the maximum speed of motor for a given setting of the throttle, the latter being kept well closed in order to prevent excessive speed. It will generally also be advisable to give the ignition different settings to obtain the best results. If the exhaust shows black smoke the carbureter is feeding too much gasoline. This is apt to be accompanied by misfiring and explosions in the exhaust pipe and muffler. If there is backfiring (popping) in the intake pipe and carbureter, too little gasoline is going in unless this is due to a faulty valve, valve-spring or some unusual cause.

Set the spark and throttle so that the motor runs comparatively slow. Then open and close the throttle quickly. The motor should speed up rapidly without misfiring or backfiring while speeding up. It is not unusual for backfiring to occur when the throttle is quickly closed, although the motor operates satisfactorily otherwise.

If backfiring occurs when speeding up rapidly, open the regulating (needle) valve to feed more gasoline. If black smoke and misfiring occur, close the regulating valve slightly. The air-valve spring will need adjustment after changing the setting of the gasoline valve. It is a matter of trial for each type of carbureter to determine which way to make this adjustment. Tightening the air-valve spring makes a richer mixture and relieving it produces a leaner one.

After the above adjustments have been made, the car can be tried out on the road. Hills of steep grade naturally give the best means of trying out. In the absence of steep grades the rapid speeding up of the car is a good way of determining the action of the carbureter.

The adjustments of the carbureter to be made on the road are of the same nature as those already given above. The maximum pull and speed of the motor are, of course, what are sought.

Every Cloud Has a Silver Lining

To a large extent the law of compensation takes care of inequalities. Crude oil is now used to allay the dust of our roads; hence it may be observed that the automobile increased the demand for liquid fuel and at the same time created a demand for the by-product of the process. Automobiles create road dust, which the by-product cements, thus balancing the evils.

It Stands to Reason That Noise Is the Index of the Rate at Which the Owner of a Car Is Getting Rid of His Hard-Earned Money

That noise when it grows sufficiently indicates the end of the life of the car.
That noise may be due to a loose-fitting piston.
That noise may follow if the piston pin bearing is slack.
That a worn crankpin bearing will result in considerable noise.
That a slack main bearing is the father of overmuch noise.
That a bent crankshaft belongs in the noise category.
That the valve springs may be too strong for silence.
That weak valve springs belong in the column of noise.
That valve stems in loose guides will be noisy.
That loose halftime gears will produce noise and other ills.
That a flexible camshaft is a noisy proposition.
That a loose flywheel produces a knock and a dangerous condition.
That clutch springs, if they are slack, will produce a noise due to slipping of the clutch.
That lack of clearance in the crankcase results in scraping of the connecting rod and noise.
That loose joints in the crankcase are responsible for a wheezing noise.
That a carbureter that is too small for the motor evolves a carbureter noise.
That intake manifolds work loose at the flanging and produce a wheezing noise.
That constricted passageways in the exhaust piping are responsible for noise.
That a muffler that is half worn out is leaky and produces a noise.
That lack of clearance between the fan blades and the radiator is responsible for noise, and leads to the purchase of a new radiator.
That a worn-out gear type water pump produces noise without pumping water.
That the radiator, if not securely fastened down, will work a hole in its walls, producing noise.
That live rear axles, unless they are kept properly adjusted and lubricated, will make a noise.
That the bevel drive must be adjusted and properly lubricated, otherwise it will make a noise wearing out.
That the mudguards must not be fastened with stove-bolts or they will surely make a noise.
That the bonnet has to be securely fastened down or it will rattle.
That the body, if it is not properly fastened to the chassis frame, will work loose and make a noise.
That the tools in the tool box, unless they are secured, will get mixed up, and produce a fearful noise.
That the exhaust pipe, unless it is properly secured, will whip about, wearing holes in the gasoline tank, and other contacting parts, besides making a noise.
That the exhaust cut-out, unless it has a tight clapper, will be the cause of some noise.
That the magneto universal joint, unless it is suitably designed, will make a noise.
That the universal joint, unless it is suitably designed, will make a noise.
That the universal joints of the shaft drive must be lubricated or they will wear slack and make a noise.
That noise is at home in poor lubricating oil.
That a poor automobile is best known by the amount of noise it makes.
That paint in the many joints around the chassis will not prevent noise long enough to warrant paying for the car.
That beeswax on the gears, for the purpose of subduing noise, is not to be compared with a good fit.
That the best noise-killer in the world is accuracy of fit of the parts.
That the way to prevent a good automobile from becoming noisy is to maintain good conditions of lubrication.
That noise visits slack bearings and wears out its welcome.
That noise is all that emanates from some salesmen when they are describing their products.
That noise is catching, and it might be in the products that some salesmen describe.
That the first sign of noise in an automobile is the proper cue for the owner of the car.
That noise is a burglar and to catch him at his profession is a wise proceeding.
That noise most readily finds a lodging place in the automobile that is driven at a high rate of speed.
That good roads and noise are not on friendly terms with each other.
That noise costs the automobilists of America over $100,000,000 per year.
That noise is the silent salesman of the repairman, and the friend upon whom he can always place reliance.
That noise causes over 75 per cent. of the total cost of maintaining automobiles in this country.
That noise is the sign of lack of skill of the builder of a car if it appears in a new product.
That noise is the sign of recklessness of the owner of the car if he drives at high speed over bad roads.
That noise is an indication that the repairman will have butter on his parsnips.
That noise may be deferred if the automobile is driven at a moderate speed.
That noise will not creep in if the car is cleaned every time it comes off the road.
That noise cannot exist in the presence of good lubricating oil.
That lubricating oil would be cheap at a dollar a drop if the owner of the car would take the pains to apply it at the right time and place to prevent noise.
That noise is a cracked bell that tells the owner of the car that he is on the way to the poorhouse.

Avoid Joints to Save Trouble—There should be no joints in the piping between the tank connection and the carbureter connection, primarily because such joints serve no useful purpose, and again, they are not necessary. The best of joints are more or less prone to give trouble, and as they are oftentimes made they are sure to go wrong.

Careful Fitting Always Necessary—When rear wheels come off, it is not safe to figure that the thing will happen in front of a hospital. They will come off if the fitting is not carefully done. As some cars are made, they may come off if the fitting is well done in certain cases. It is important to be very careful in such cases, and it will reflect no credit on the repairman who fails to do good work.

Digest

Extracts From the Best Foreign Journals Dealing with Subjects Related to Automobile Engineering --Fuel in a Solid State.

Solidified Gasoline—This substance is the invention of a Roumanian chemist, Dr. V. Rosculetz. Briefly described, it is the result of dissolving stearic acid, after undergoing prolonged treatment with hydrochloric acid at a high temperature in the hydro-carbons to be solidified, the solution being mixed with an alcoholic solution of caustic soda at about 80 degrees C. After cooling the hydro-carbon is no longer a liquid, but forms a jelly-like mass, possessing the same colors as the hydro-carbon used for its manufacture, and of a sufficient consistency to be carried and handled like any other solid body.

Solidified petrol is not a chemical combination, as the petrol used for its manufacture can be completely evaporated; indeed, under the microscope it appears to have a capillary structure, and to be formed of a sort of extremely fine sponge, in the pores of which unchanged liquid petrol is contained, and the mass representing approximately 98 3-4 to 99 per cent. of petrol, 1 to 1 1-4 per cent. stearic and caustic soda. The physical properties are the same as those of liquid petrol; evaporation very easy; the same heating power; inflammability and carbureting power very intense. Upon heating solidified petrol it does not melt under ordinary pressure, but evaporates, the heat simply causing vapor to be given off slowly, while if ignited it does not melt, but burns like wood or coal, and the flame can be easily put out with a piece of cloth, and even by water. A curious property of solidified petrol is that its volume is less than the volume of liquid spirit used in its preparation, the reduction in volume ranging between 10 and 20 per cent.

The method of utilizing the solidified petrol for the operation of petrol engines may first be mentioned. As it gives off its vapor without having to be converted back to a liquid form, the use of the ordinary type of carbureter, with its float feed and spraying jet, is entirely obviated. This part of the system has been worked out under the direction of another Roumanian—an engineer, Mr. G. Constantinescu—and, it may be added, is still in course of further development. As installed on a 45-horsepower six-cylinder Fiat and a 40-horsepower four-cylinder Darracq, on the near-side running board is mounted a long, narrow and shallow box, in the bottom of which are five small diameter pipes, through which the whole of the exhaust gases of the motor are directed, in order to give the necessary heat for vaporization. Above the pipes is a *grille*, on to which the jelly-like substance is packed, the lid then being closed to hermetically seal the box, except for an air inlet in one of the narrow ends, the pipe conveying the gas to the combustion chambers being connected to the opposite end. Under the suction of the engine air is drawn into and through the box, it being, in its passage, thoroughly impregnated with petrol vapor, or, in other words, carbureted. As the surface of the jelly substance presented to the action of the air becomes exhausted of its petrol, the holding medium falls into the bottom of the box, the residue, which, as already mentioned, only amounts to about 1 per cent. of the whole, having somewhat the color of beeswax.

In a recent test in London (Eng.) of the fuel with a Darracq car, the inlet pipe was ingeniously fitted up so that by the turning of a lever the engine could be made to draw its supply of gas either from the box which was filled with solidified petrol, of a density of .760, or from the usual carbureter supplied with liquid spirit. The motor was started up on the solid fuel, and answered to the second turn of the handle, indicating that the carburetion was rapid and intense; while, so far as the short run went, the engine certainly seemed to pull better on the solid than on the liquid fuel. A good deal of this increased efficiency is attributed by those responsible for the new fuel to the fact that the exhaust gases, which are all passed through the petrol box, yield up a large portion of their heat to the gaseous mixture, which is dried and perfectly carbureted before it enters the cylinders of the motors, the explosion being thus greatly facilitated, the combustion in the cylinder also having time, owing to the dry nature of the gas, to take place under good conditions before the exhaust begins.

On the cars referred to above an extra air inlet, controlled by a suitably placed lever, is provided, but it is intended to arrange that the air supply through the gas-making chest shall be automatically regulated, in accordance with the speed of the engine. Another very interesting experiment is also to be made; that of removing the radiator from the car, and passing the water used for the cooling of the cylinders through the pipes in the bottom of the solidified petrol box, instead of using the exhaust gases, and thus at the one and same time cool the circulation water by utilizing its heat to give the necessary vaporizing temperature in the petrol chest.

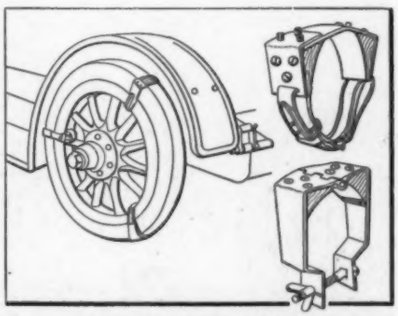
A series of comparative tests have recently been carried out by Mr. R. W. A. Brewer, A.M.I.C.E., on a four-cylinder engine, having a bore and stroke of 63.5 mm. by 102 mm., using .764 solidified petrol and .720 liquid spirit, the results of which are summarized below:

Test.	Mean Revs. per Min.	Mean b.h.p.	Consump. per Hour Kilo.	Consump. per b.h.p. Hour Litre.
Heavy solid s.g. 0.784	1428	10	4.26	0.560
Light Liquid s.g. 0.720	1428	10	5.10	0.710
Heavy Solid s.g. 0.764	1050	12.2	3.80	0.408
Light Liquid s.g. 0.720	1050	12.2	4.63	0.528

In the first two of the above tests, the comparison of weight of the solid and liquid fuel works out at .835, or 16.5 per cent in favor of the former, while the volume comparison is as .79 to 1, or an economy of 21 per cent.

It is not possible at the moment to give accurate figures as to the cost of solidified petrol. We are informed, however, that it will be but slightly in excess of that of liquid spirit. In this connection, too, reference may be made to the claim that, while a certain quantity of petrol occupies in its solid form 20 per cent. less volume than in the liquid state, it shows 30 per cent. greater mileage, owing to the perfect combustion, this latter feature being demonstrated by the colorless and smokeless nature of the exhaust gases. In addition to this a notable point is the possibility of using petrol of greater density—and consequently cheaper—than that usually employed (that used on the demonstration cars was .760), and also mixtures of petrol and paraffin. Already successful tests have been made with a solidified combination of the two, in the proportion of 60 per cent. spirit and 40 per cent. of the heavy grade of hydro-carbon.

Another interesting use of the solidified petrol is in connection with motor car headlights and lamps, as these can be lighted on the oxy-petrol system—that is, a combination of oxygen and petrol vapor, obtained by passing oxygen, contained in a flask or steel bottle, through a box or tube fitted with the jelly substance, the cost of running five 60-cp lamps five hours per day for a month is stated to be only 60 cents. Another example of the use of solidified petrol is seen in connection with petrol lamps, in which incandescent mantles are used. In these the ordinary container can be filled with pieces of the jelly substance, so that if the lamp is overturned the light simply goes out.—*The Motor Car Journal.*



Two patterns of mudhooks, intended for fitting to a tire to enable a car to pull itself out of soft ground or driving on ice. These have been devised by R. V. Howard, of Barton-on-the-Heath, Moreton-in-Marsh, Gloucestershire, England. The type shown in the upper view is for small tires and is so arranged that the studs are clear of the ground until the wheel begins to churn the soft earth into a rut. The lower one is for heavy cars and is more substantially constructed.—*The Autocar.*

In the Overhauling of a Car

Describing the Different Operations Involved in Taking Up Play and Wear in the Crankshaft Bearings

PROBABLY the crankshaft is the most costly piece in the make-up of an automobile. Of the 2,500 square pieces in a car, the crankshaft may cost as much as 500 of the average pieces. This being so, considering the fact that the crankshaft has to do the hardest part of the work, considering, further, the fact that the crankshaft is the most ill-shaped member in a car from the point of view of the ability to do the work, is it not strange that other parts of automobiles fail, especially when it is considered that the crankshaft stands up in nine cases out of ten without serious consequences? What the situation tells is that the materials of which crankshafts are made are of the best for the purpose, and, were it the purpose here to extend the discussion, it would offer a chance for comparison that would not argue well for the materials that fail in service that is far less arduous than that which falls to the lot of the crankshaft. At all events, when an automobile is being overhauled prior to a hard season's work, it is necessary to size up the situation with a discriminating eye, and the automobilist who has the best grasp of the situation is the one who will fare best in the long run. Most crankshafts fail (a) due to the lack of care that they receive in service—they are not sufficiently lubricated; (b) on account of the practice of making the motor go slow when it is desired to make the automobile go slow—the sliding gears are not employed for their intended purpose; (c) the material of the crankshaft may be good, but there is not enough of it used; (d) there may be enough of the material, but the design of the crankshaft may be faulty; (e) the motor may be allowed to speed up—some chauffeurs think that this is the right way to try a motor to observe if it is in good fettle; and (f) the bearings may be so slack that the crankshaft is induced to bend as it takes the load.

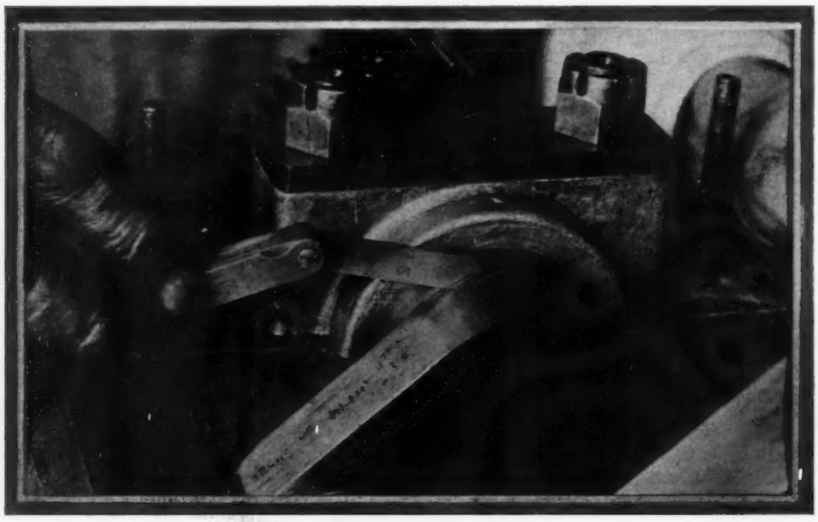


Fig. 2—Showing how the feeler gauge is used in connection with the motor bearings to ascertain the amount of clearance between the webs of the crankshaft and the side of the bearings

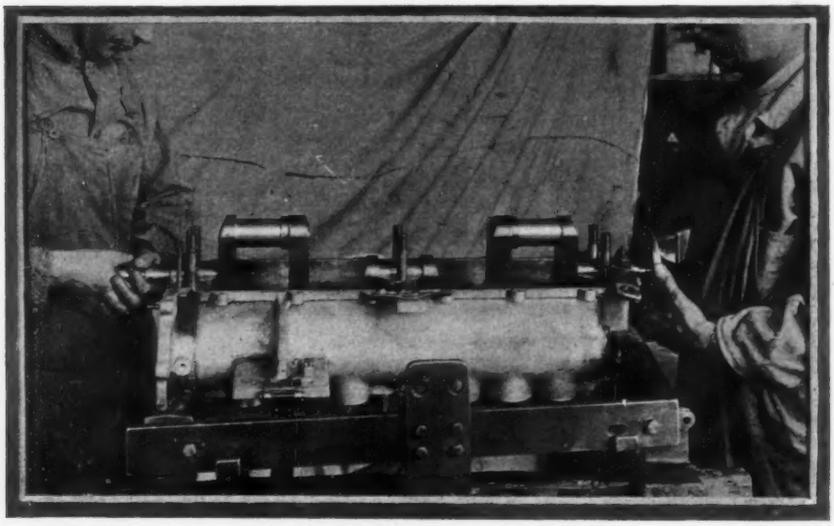


Fig. 3—The correct method of lifting the crankshaft into the bearings so that the bluing effect will be uniform

Rigidity is necessary if the crankshaft is to last for a long time—the platform, so to say, should be stable. This rigidity may not be afforded. The case may not be so designed as to withstand the moments that service demand of it. If the bearings are so scant—that is to say, if the projected area of the main bearings, in view of the duty that they have to perform, is restricted—it is scarcely to be expected that the crankshaft will do work for a long time and not show the result of this service. The owner of the automobile cannot be blamed for the design, but if he is so unfortunate as to purchase an automobile equipped with a motor that is too frail to stand up it remains for him to take into account all of the attending conditions and to govern his actions accordingly.

There is no way that the crankshaft can be damaged so readily as to make the motor run free at a very high speed. The reason for this lies in the fact that the secondary moments increase as the square of the speed. This is a way for saying that, if the extreme fiber strain in the section of the crankshaft is, say, 10,000 pounds per square inch when the motor is running at 1,000 revolutions per minute, this strain will increase to 40,000 pounds per square inch if the motor is run at 2,000 revolutions per minute, and, contrary to the belief of the average automobilist, this strain will be the

same whether the motor is propelling the car or the automobile is standing still.

The next way to do damage to a good crankshaft and rupture a poor one is to find a long hill that will tax the ability of the motor to drive the car up the grade, and instead of sliding to a lower gear make the motor labor, as it will under such conditions. It seems to be the idea of some automobilists that an automobile is valueless unless it will climb all of the hills for miles around on high gear, but they fail to take note of the fact that the depreciation of the motor, and especially of the crankshaft, is enormously increased under such conditions; nor does it matter whether or not the car does actually climb the grade on high gear—the damage will be done in any case.

The extent of damage that will result due to the poor management of an automobile on the road, while it depends upon the quality of the car, to begin with, will increase with the square of the speed on a level, and as the speed of the motor falls off when a grade is being negotiated. This depreciation will also be more or less, depending upon the degrees of lubrication, first in view of the extra load that is imposed by added friction, and finally if the bearings are allowed to run dry, when they will "freeze."

But good lubrication does more than keep the bearings from freezing and reducing the friction load. The shock that is so detrimental to an automobile is much reduced when a film of lubricating oil is placed between the members at joints. The lubricating medium is a buffer of no mean proportions. It is frequently claimed that the great value of pneumatic tires lies in the softening of the shocks that would soon cause the metal of which the automobile is made to rot. The tires are not nearly so efficacious for this purpose as the little films of lubricating oil that stand between each little unit shock and reduce the measure of the blow ere it is permitted to join other blows and swell into a great shock. Heat is not to be recommended in the region of the lubricating oil, it being the case that the body of the oil is reduced as it is heated up. The crankcase of the motor, if it is not provided with "breathers," is more likely to so heat that the lubricating medium will fall off in the property called body and will scarcely be equal to the occasion. It has been claimed that the heat in the crankcase frequently reaches the level of the boiling point of water (212 degrees Fahrenheit), and that the lubricating oil will be as efficacious for the purpose at this high temperature as it will at the temperature of the surroundings is scarcely to be believed. If the flywheel of the motor is of unusual weight, it should be plain to the owner that this weight will have unusual effect upon the main bearing next to the flywheel; but if the bearing is not looked after at frequent intervals it will show more wear than the other bearings, and in such a case the flywheel weight will cause a bending of the crankshaft, under which conditions its life should be much shortened. That speed, if it is run up unduly, provided the bearing next to the crankshaft is much depreciated, will do its deadly work is assured. Were it desirable to design a testing machine for the purpose of testing steel to destruction, this would be a very good way to go about it.

The longevity and sweet-running qualities of the gasoline motor, provided the construction is right, depend in a large measure upon the condition in which the bearings are kept, and it is useless to expect efficiency if they are not constantly in good order. There are no hard-and-fast rules to follow as to the manner in which motor bearings should be bedded in, as it depends upon the method of attachment and the material from which they are made. One method that is applicable to most cases is shown in the different stages in the accompanying illustrations.

Owing to the heat generated by friction the first consideration to be borne in mind is the amount of clearance necessary to allow the crankshaft to work after the expansion has taken place. With some metals this is fixed at two to three one-thousandths of an inch and with other metals it may be as high as four one-thousandths. In all cases there must be a clearance so that the film of lubricant can coat the bearing in its entire area. Before starting to take up any play in the bearings it is a wise plan to insert the crankshaft in a lathe and ascertain whether it is running true. The slightest disalignment will have a deleterious action on the bearings and effectually prevent the workman obtaining good results. The reason for this is clear, as, instead of touching the bearings evenly when they are screwed down tight, owing to the eccentric motion due to the disalignment, one

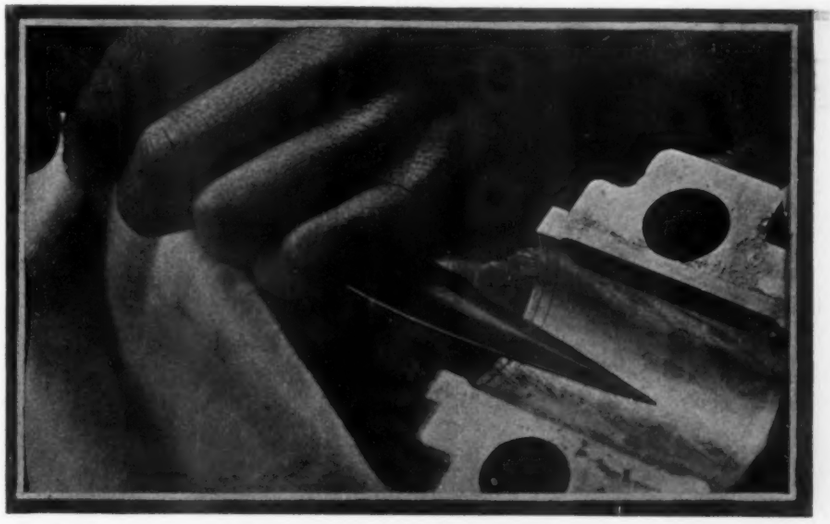


Fig. 4—Showing the operation of scraping the bearings of a motor, using a curved scraper and illustrating the correct method of holding the tool

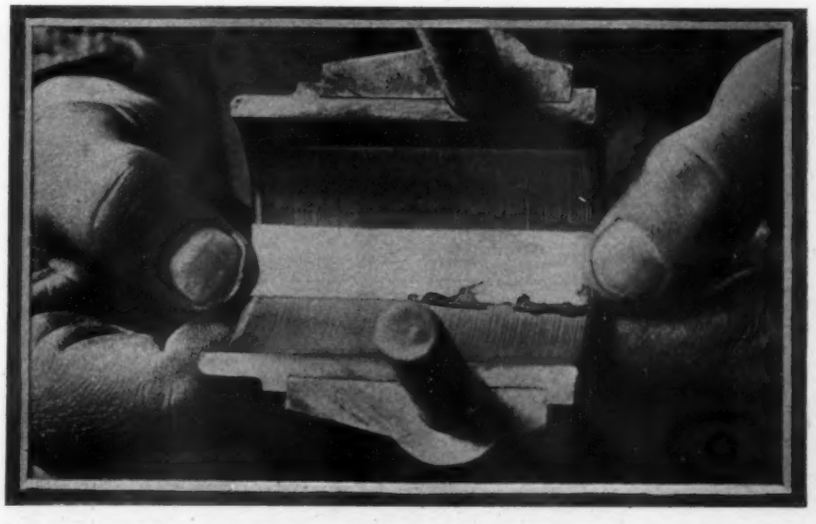


Fig. 5.—If there is to be any clearance in the bearings the way to obtain this is shown in this illustration. The operator is seen laying a strip of paper the required thickness in the bearing

part will touch and leave the opposite side with too much clearance.

An excellent method of placing the motor is shown in Fig. 1, where the supports are fixed to two side bars that take the place of the chassis frame. This method is much easier than when the motor arms are used for supports, and with chain or rope tackle and a supporting arm similar to the one shown in the illustration the motor can be manipulated by one or two men with ease using a pair of trestles to support it while the actual work is being performed.

Owing to the end thrust exerted on the crankshaft by the clutch the engine bearings are liable to wear at the ends, and in order to ascertain if such wear is more than the limits of tolerance a feeler gauge should be inserted in the manner shown in Fig. 2. Here again comes a question of the metal employed in the bearings, but as a safe guide this clearance should be about fifteen one-thousandths of an inch where forced lubrication is employed and slightly more for splash. The crankshaft should be revolved and the gauge inserted at different points as a test of uniformity. The next operation depicts the crankshaft being lifted into the bearings after the latter have been cleaned and the journals of the shaft coated with Prussian blue, which for brevity is known as the bluing process. The method of lifting the shaft is shown in Fig. 3 where the two men are carefully laying the shaft down, taking care that it touches all three bearings at the same time. The effect of bluing the shaft is to leave an imprint on the bearing at the point that it touches. The bearing is then scraped and tested with the blued shaft till all three bearings show contact over the entire area. This operation is shown in Fig. 4 and cannot be done hastily. It is better to take two strokes of the scraper to remove

Fig. 1—Method of attaching motor to a dummy frame which serves as an anchorage for the chain hoist

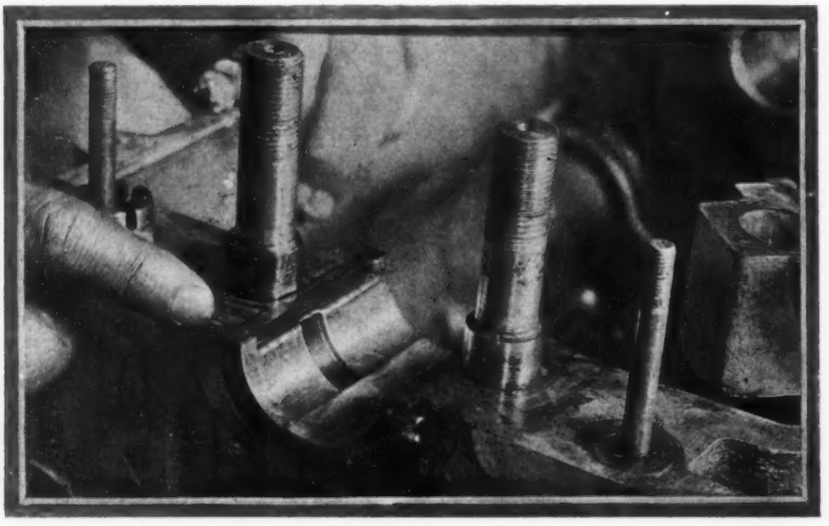


Fig. 6—The bearing's supports require filing in order to compensate for the metal that is scraped away and the operation shows bluing of the crankcase to obtain an impression to guide the workman

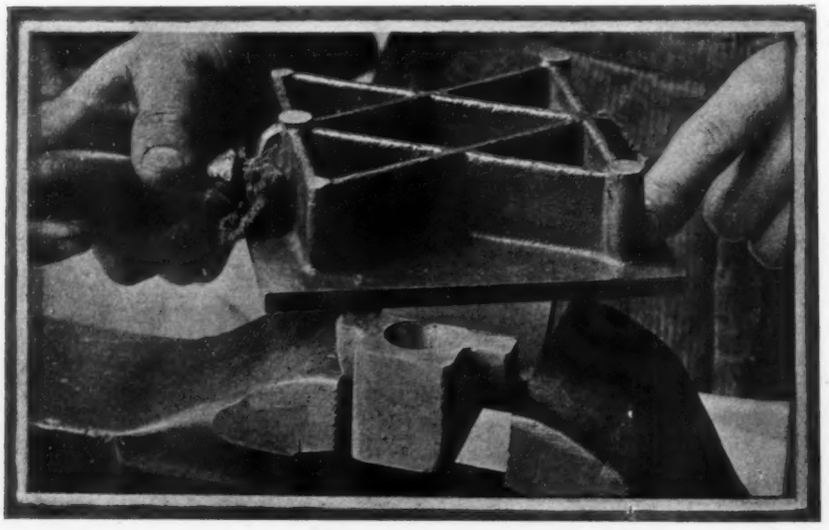


Fig. 7—Showing the use of a surface plate that has been blued on the support blocks to insure the filing is uniform

a given quantity of metal than to take one cut, as it is easy to take a little off; but should the cut be too deep it is impossible to fill it in, and the depression will spoil the bearing. The method of holding the scraper is also shown in the same illustration. The hand nearest the bearing regulates the pressure and the other is used to steady the cut and act as a guide to the parts to be removed. After each successive operation great care must be exercised to remove the particles of metal that are shaved away, for if they are allowed to remain in the bearing they act as a point of support and prevent the bearing from touching, causing the cuts that one finds in bearings. It will be noticed that up to the present the holding-down blocks have not been used and there is no necessity to use them till the upper halves are a good fit. When all the bearings have been scraped and the crankshaft beds properly, which means that the imprint from the blue is uniform, a piece of paper gauged to the thickness of the clearance required is placed in the upper part of the bearing that has been treated, as shown in Fig. 5. Referring to the upper part of the bearing it must be remembered that the motor has been upside-down during the scraping operation and consequently what in the illustration looks like the lower half is in reality the upper when the motor is in the car. The effect of the paper is to prevent the blue from touching the upper half of the bearing and maintain the required clearance after the bearing has been tightened in all respects and the paper is removed. A fine liquid shellac is used to stick the paper to the bearing, and if there are any oil ducts that feed the bearing in the crankshaft they must be slightly tapered to pre-

Fig. 10—In fitting new bearings the sides should be turned or milled to obtain required clearance; M3, M4, M5, milling cutters.

down it will leave an impression on the latter. The block is then placed in a vise and filed till the faintest impression possible is left upon it when bolted down with the crankshaft in the bearing. In this illustration the strip of paper will be seen in position in the bearing and the operator in the act of bluing the aluminum base. In order that the face of the block can be filed it is advisable to use a surfacing plate that has been previously blued and this will show whether the surfaces are true. An excellent method of carrying out this operation is shown in Fig. 7. Too much attention cannot be paid to the method of tightening the bearings, and the tools shown in Fig. 8 are the proper ones for the purpose. Uniformity in tightening must be carefully borne in mind as being as important as the scraping itself.

The method of working the crankshaft to and fro is shown in Fig. 9 and consists of rocking the shaft about half a turn one way and then reversing the operation.

The photographs were taken at the Pierce-Arrow Car Co.'s repair shop at 233 West Fifty-fourth street, New York, and the method described is used on Pierce-Arrow cars. The question of clearance in the bearings is one that the owner of the particular make of car should inform himself upon by writing to the agent or factory where the car is turned out. In some makes of cars there is no clearance allowed at all in the center of the bearing where white metal is employed, but at the edges it amounts to in some cases three one-thousandths of an inch. If the bottom half of the crankcase is removable without disturbing the crankshaft it is possible to tighten the connecting rod bearings without removing the motor.

vent the paper from getting torn as the crankshaft rotates during the bluing process.

The scraping of the upper half of the bearings will have caused the lower half to recede and before the bearing can be made to fit it is necessary to file the block to compensate for the metal that has been removed. The upper half of the base chamber is blued in the manner shown in Fig. 6 so that when the block is bolted

Coasting Saves Fuel

Likewise Rests the Motor and Should Be Indulged in Wherever Roads and Traffic Conditions Permit.

COASTING should be indulged in whenever the nature of the country and the amount of traffic on the road will allow it to be done with safety. Not only does coasting tend to economy in fuel but it allows the motor to rest, particularly if the latter has been working hard in climbing hills or running over heavy roads. When about to coast the motor should be declutched, the gear lever put in the neutral position and the motor slowed down to its slowest speed. If the hill is a long one, the motor may be stopped entirely, thus stopping the consumption of fuel and the wear and tear on the motor and allowing the latter to cool off. With sliding gears, the high-speed position can be used instead of the neutral whether the motor is running during the coast or not. At the top of a long hill the switch may be thrown off after declutching, but before the end of the hill is attained the ignition should be switched on and the clutch let in gently, starting the motor by the momentum of the vehicle.

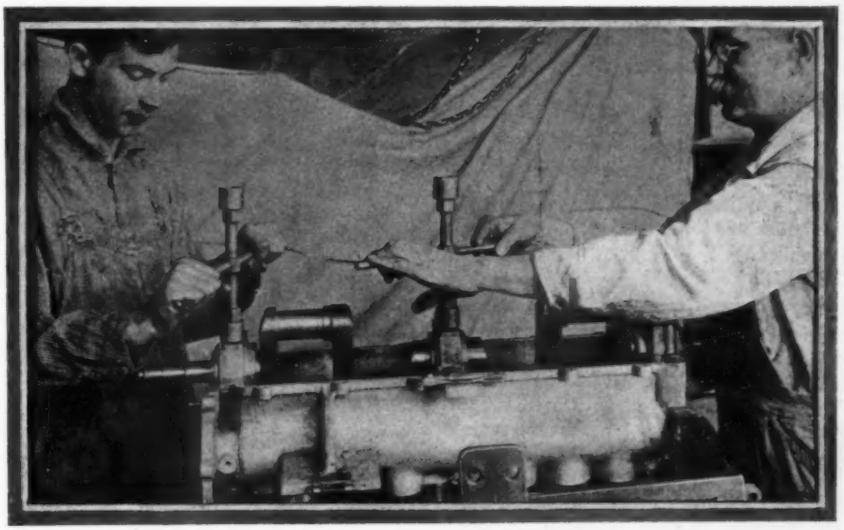


Fig. 8—Tightening up the bearings during scraping must be carried out with great care and uniformity, and it is necessary to use socket wrenches for the purpose

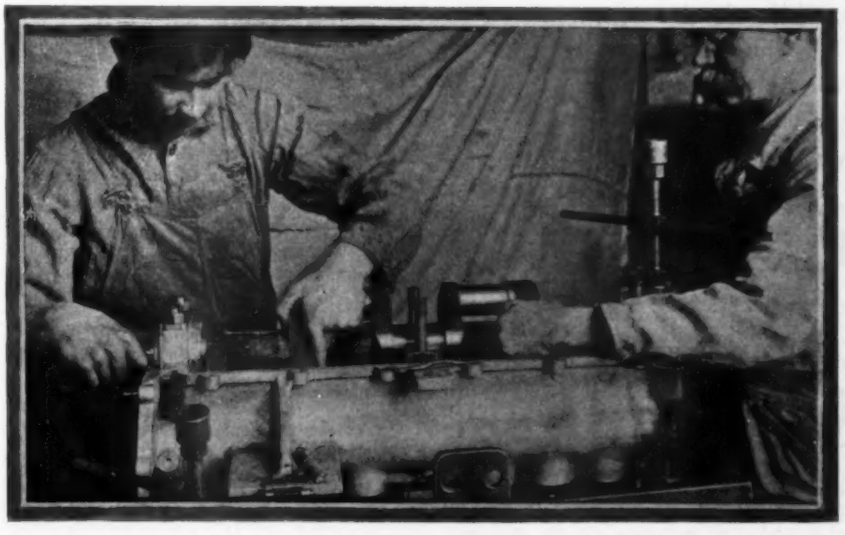


Fig. 9—Depicting the method of rocking the crankshaft after it has been blued in the bearings to obtain the impression

What Some Subscribers Desire to Know

The Editor invites owners and drivers of automobiles who are subscribers to THE AUTOMOBILE to communicate their automobile troubles, stating them briefly, on one side of the paper only, giving as clear a diagnosis as possible in each case, and a sketch, even though it may be rough, for the purpose of aiding the Editor to understand the nature of the difficulty. Each letter will be answered in these columns in the order of its receipt. The name and address of the subscriber must be given, as evidence of good faith, adding a nom de plume if the writer desires to withhold his name from publication.

Starting Crank Chatters Going Up a Hill

EDITOR THE AUTOMOBILE:

[2,582]—I recently bought a car and so far have had no mechanical trouble with it. On the high gear it is particularly silent except when climbing a hill. There seems to be a chattering noise as if a gear were loose and rubbing against something, and when the motor is running fast it is alarming. Do you think that the timing gears are loose? PUZZLED.

Boston, Mass.

The noise you hear seems to come from the starting crank being loose and striking the engaging dogs on the crankshaft. If there is a catch fitted to prevent this the spring is either loose or the catch jumps the slot. If there is no provision to prevent the crank from dropping back, as is the case when the car is climbing a hill, a spring should be inserted in the manner shown in Fig. 1 between the end of the timing case E and the boss B. If the housing is not extended as shown in the illustration, the matter will be very simple.

Polishing Brass Is Mostly a Matter of Work

Editor THE AUTOMOBILE:

[2,583]—Will you kindly give me a little information as to the best polish to use on automobiles? A SUBSCRIBER.

Casey, Ill.

There are doubtless a number of brands of polishing materials for brass work on automobiles, but we are much inclined to the belief that "elbow grease" is at the bottom of the most successful effort. If the brass work is polished at frequent intervals, and the workman goes at it diligently on each occasion, the automobile will show that it is being given proper attention, but in the absence of this treatment, it will look as if it is the companion of neglect.

Graphite Is Recommended by the Makers Thereof

Editor THE AUTOMOBILE:

[2,584]—Will you send me address of firm who manufactures the automatic windshield?

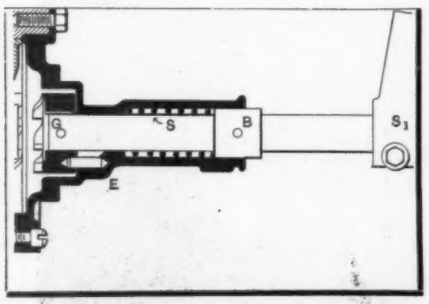


Fig. 1—Showing how the spring prevents the starting crank from contacting with the shaft engagement

Is it good practice to put finely powdered graphite in a crankcase when using either a splash or pump system? If this practice is good, about what proportion of graphite to oil is best? CHARLES M. RALEY.

Claremont, N. H.

C. A. Metzger, 239 West Fifty-sixth street, New York City, or the Emil Grossman Co., 250 West Fifty-fourth street, New York City, will be able to afford you information as to automatic windshields.

In re graphite, it is our understanding that a small amount of graphite is mixed with the lubricating oil. It should be of the kind that is manufactured specifically for this work. You should be able to get considerable information of a detailed character from the Joseph Dixon Crucible Co., Jersey City, N. J

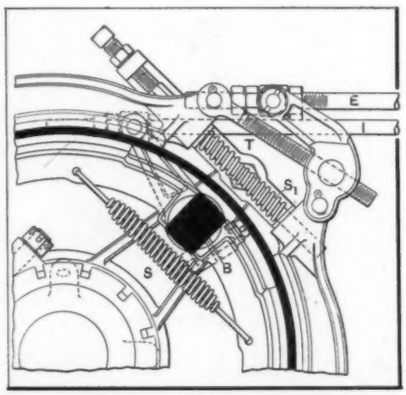


Fig. 2.—Showing a strong spring used to contract the brake shoes after application

Method of Attacking Brake Connections to Obtain Compensation

Editor THE AUTOMOBILE:

[2,585]—I should like to have the brakes of my car made so that they compensate, as at present I find it extremely difficult to adjust each side separately and obtain uniform results. Would you be kind enough to publish a sketch as to how this can be executed? At present the brakes are operated by pedal and side lever, and both operate on the drums on the rear wheels. I am also troubled with the brakes in another respect; they have a tendency to chatter and rub. What, in your opinion, is the cause of this condition, and what can I do to remedy it? S. T. W.

South Orange, N. J.

If you will refer to Fig. 4 you will get an idea as to the method of fitting the brake connections so that they will compensate when applied. The clutch withdrawing arm carrier C traverses the frame, and to this is attached a lever which connects with the bar B1. One end of this bar is connected with the left-hand brake and the other to the tube T1 which runs inside T and connects with the right hand brake rod R. The side lever brake connects with the bar B and the lever arm on the tube T, which in turn operates the brake rod R1.

The reason your brake chatters or rubs is probably due to the fact that the shoes are a loose fit on the operating tongue (as shown at B in Fig. 2) or the spring S is not sufficiently strong to pull the shoes back into a neutral position. Fit a stronger spring. If it is the outer shoe that rubs, fit a stronger spring as shown in the illustration at S1.

Racing Records Given in Last Week's Automobile

Editor THE AUTOMOBILE:

[2,586]—Being a subscriber to your magazine, I would like you to answer some questions through your "Letters" column:

1. What car made the record of 100 miles, averaging 89.7 miles per hour on the Brooklands track?

2. What is the best formula for rating horsepower?

3. What kind of bearings are used in the 90-horsepower Fiat, plain, ball, or roller? Which do you consider the best?

4. Would a light flywheel have any effect on the smooth running of the motor, and why? SUBSCRIBER.

New York City.

1. The Thames is probably the car that you have in mind.

2. We gave the new English conclusion in relation to formula in THE AUTOMOBILE of March 16. Our own belief is that there is no formula that will do any better work than might be expected of a fortune-teller. The best way to find out what a motor will do is to test it for that purpose.

3. Plain bearings.

4. Yes, the motor will run badly. The function of the flywheel is to absorb energy

What Other Subscribers Have to Say

The Editor invites owners and drivers of automobiles who are subscribers to THE AUTOMOBILE to communicate their personal experiences for publication in these columns for the worthy purpose of aiding brother automobilists who may be in need of just the information that this process will afford. Communications should be brief, on one side of the paper only, and clearly put, including a rough sketch when it is possible to do so, and the name and address of the writer should be given as evidence of good faith, adding a nom de plume if the writer desires to withhold his name from publication.

during the part of the stroke when there is a surplus, and to supply that surplus during the part of the stroke when the pumping losses are maximum. The greater the flywheel effect under the circumstances, the more smoothly will the motor perform.

Weakness of Iron Supports Causes Sagging Running Boards

Editor THE AUTOMOBILE:

[2,587]—The running boards of my car have a tendency to sag down towards the rear, and it gives the car a lop-sided appearance. Would it be better to fit metal running boards?

DE STYLE.

Norristown, Pa.

The matter of the material of which the running boards is made is purely a question of choice, and provided the irons are strong enough there is no reason why wood should sag in the manner you indicate. An iron made after the manner as shown in Fig. 3 is not much heavier than one of small section. The sizes indicated will allow for a good size running board on which a tire carrier and side tool boxes can be carried with impunity.

There Is a Tradition That Chickens Have Teeth

Editor THE AUTOMOBILE:

[2,588]—I am a constant reader of THE AUTOMOBILE, and in several of the recent large issues, in the advertising section under the heading, "Wheel, Rim and Tire Section," I notice among the list, spring wheels, but I have looked in vain for months for any advertisement of a spring wheel; there seem to be none on the market, nor even claimed to be on the market, nor are there any being demonstrated in actual practice. I would like you to tell me through your "Letters" column why this is so. Also is there supposed to be an inherent shortcoming or inefficiency in any or all spring wheels?

ERNEST G. STACKPOLE.

San Quentin, Cal.

Evidently, the advertising make-up man had aspirations, or he may have thought that there should be wheels of the kind referred to, which, however, seems to have been based upon a fallacy. In the manufacture of automobile wheels, the pneumatic tire is used because the small road inequalities are swallowed up by the tire, and when the considerable road inequalities are intercepted, the resulting shock is delivered by the air under compression around the circumference of the tire, and the work is taken up by the whole fabric of the same rather than at the point of contact. In a solid tire, if the same is of good rubber, this idea works out to a partial extent. It has been found in practice that the rubber medium does not transmit vibrations as readily as air, and it is for this reason that solid tires have not replaced the pneumatic kind up to the present time. Mechanical wheels, referring to them broadly, are made up of a plurality of spring units, but the springs are not so related to each other that when one is subjected to work that work is transferred to all the springs in the system, and so it comes to pass that each spring must be strong enough to do all the work independent of the other springs. It will be remembered, on the other hand, that each particle of air in the envelope of a pneumatic tire delivers to its relating particles of air all of the work that it is incapable of handling, and the distribution of the work, as it goes on under these conditions, produces the pneumatic effect. There are a great number of inventors working upon mechanical wheels, and some of them have ideas that promise overmuch. If these wheels cannot be had upon the market, it simply means that the inventors are not as yet ready to "try it on the dog."

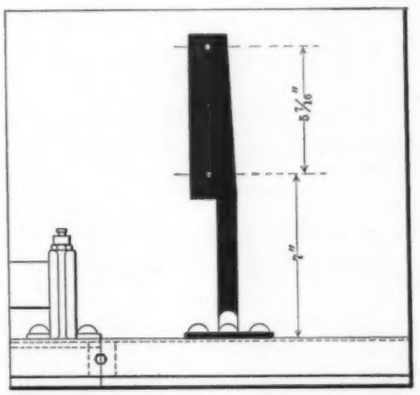


Fig. 3—Type and dimensions of side platform irons that will prevent sagging and permit trunks and two tires being carried with safety

Both Wheels Exert an Equal Torquing Moment

Editor THE AUTOMOBILE:

[2,589]—Kindly answer the following question through your Letter Department in THE AUTOMOBILE.

Are both rear wheels of a shaft-driven automobile exerting the same power while making a sharp curve?

J. G. BLACK.

Dushore, Pa.

It is the function of the differential gear to weigh out the twisting moment as it comes from the motor to each of the road wheels, independent of the fact that one must go faster than the other on a curve. The limiting condition is that of the tractive ability of the respective road wheels. In determining the tractive ability account must be taken of the condition of the roadbed, and the effect of centrifugal force as it tends to turn the car over, also of the weight that is borne by the two wheels. The horsepower delivered to the roadbed through the two wheels, assuming the same conditions of traction, will be the same in each if the twisting moment multiplied by speed is a constant. It must be said in relation to this whole matter that it is so fraught with difficulties that there is little profit in discussing the incidental relations.

Reason for the Paint on the Brake Drums Burning

Editor THE AUTOMOBILE:

[2,590]—Will you kindly inform me through your columns under "What Some Subscribers Desire to Know" what is the best means of preventing the paint on the rear brake drums of my car from getting brown and blistered as if a blow lamp had been applied to them. STUDENT.

Hoboken, N. J.

The burning comes from the brakes being applied for a long time and over-heating or the shoes dragging continually on the drum. Make a practice while going

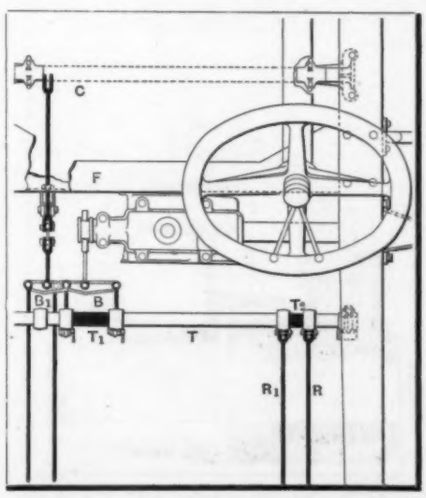


Fig. 4—A simple method of coupling the brake rods to braces to insure compensation

down-hill of using your brakes alternately, not always the one that is most convenient. It is possible that the oil hole O as shown in Fig. 5 is stopped up, preventing the oil from getting into the bearing to lubricate the pin P. If a grease cup is fitted instead of an oiler cup the same applies, as this part of the car is in a very exposed position and the water is liable to find its way into the bearing as well as dust and mud, and prevent the release of the tongue D that operates the shoes.

Position of Spark Plug

Editor THE AUTOMOBILE:

[2,591]—Some time ago I was troubled with the spark plugs of my car getting full of oil, and was compelled to stop frequently to clean them. The back cylinder in particular seemed to stop working on account of the oil more frequently than the others, but since I have changed the location from the side of the cylinder to over the intake valve in the valve cover the trouble seems to have ceased. What is the cause of this?

LUBRICATION.

Springfield, Ill.

The cause of the oil finding its way to the spark plug in the first place is the reason the plug swamps with oil. When the car is traveling up-hill the motor is turning faster than when descending a hill, with the result that unless there are baffle plates in the lower half of the crank-case the oil will flow back and the connecting rods of the rear cylinders strike deeper in the oil than the front ones. Referring to Fig. 6, the electrode E, placed horizontally, does not act as a guide for the lubricant that is thrown inside the plug, as it does in the case where it is in a perpendicular position.

Common Sense Rules in Every Case

Editor THE AUTOMOBILE:

[2,592]—Will you kindly answer the following questions through your "Letters" column.

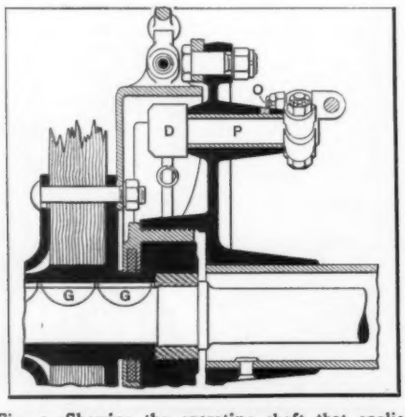


Fig. 5—Showing the operating shaft that applies the brake, with an oil hole without protection.

1. What is the law for automobiles driving on public roads?

2. Has the automobile driver right of way?

3. If he has the right to pass, which side should he take, the right or left?

4. Has the owner of an automobile the right to drive his car if he has applied for his license and it has been delayed in transit?

5. What is the rating or horsepower of a four-cylinder car, bore 4 x 4 1-2-inch stroke? A SUBSCRIBER.

Lodi, Ohio.

1. The rules of the road which have been written into law are based upon common sense. Disregarding city, town and village ordinances, the rules of the road are the same for all types of vehicles in which it is proper to keep to the right, pass other vehicles to the left, drive with moderation, and be generous to your neighbors.

2. The automobile has the same right as the horse-drawn vehicle and if the conditions are as laid down in paragraph 1, right of way belongs to the vehicle that is making the greatest safe headway.

3. Is answered in paragraph 1.

4. Yes.

5. According to the A. L. A. M. method, this motor would have a rating of 25.6 horsepower

Leak Between Combustion Chamber and Waterjacket

Editor THE AUTOMOBILE:

[2,593]—Will you kindly answer the following question in your next issue of THE AUTOMOBILE:

One evening I filled the lubricator of my car with oil, and the gasoline tank with gasoline, and took my car for a ride probably about 30 miles, and when I took it home that evening it seemed to be in good running condition, and nothing appeared to be wrong after I drew all the water from it. The next day I took the car out and filled the radiator with hot water, and started out and I did not run 1,000 feet when the water was boiling. I took the cap off the radiator and the water poured out. I then put in some cold water and started the car again with the cap off, and the water poured up higher than the windshield, and I had to put it back into the automobile shed.

Now, can you tell me whether it is the oil pump that is not pumping the oil, or the water pump that refuses to work? I have an idea that it is the oil pump that must have frozen up or must have been clogged in some way. If you can explain what the cause is, I will be greatly obliged.

CONSTANT READER.

Lopez, Pa.

The indications are that the cylinder is defective and that there is a leak to the waterjacket. The leak may be so slight that it does not materially interfere with the running of the motor.

All the Reasons for Back Kick of a Motor

Editor THE AUTOMOBILE:

[2,594]—As a reader of THE AUTOMOBILE I take the liberty of asking you to state in your columns of "Letters" all the things that would cause a four-cycle motor to kick back while cranking. Please explain fully. SUBSCRIBER.

Pittston, Pa.

(a) Spark advanced.

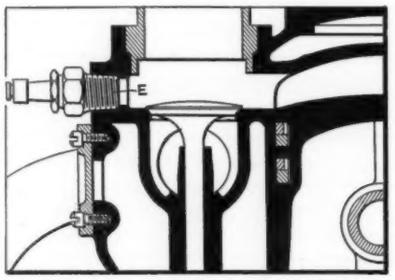


Fig. 6—Spark plug placed in the side of the valve pocket. The oil is more liable to collect in this type than when placed in the valve cover.

(b) Overheated cylinder.

(c) High compression.

(d) Good compression, and lazy cranking.

(e) Timing awry.

(f) Special grades of fuel of a character that would be pre-igniting under conditions of the normal pressure of automobile gasoline.

Coping with the Tire Problem

Editor THE AUTOMOBILE:

[2,595]—Please answer the following questions in THE AUTOMOBILE:

1. My car is equipped with 34 x 3 1-2-inch tires. I wish to use 35 x 4 on rear wheels, and what I want to know is, if for any reason one of the 35 x 4 casings were put out of commission, and a 34 x 3 1-2 were put on instead, would running the car for, say 15 or 20 miles damage the differential?

2. What is the difference in carbureter adjustment from magneto to battery; that is, granting the motor runs perfectly or nearly so on magneto, how should the carbureter be changed to run on the battery?

3. What are the objections to the use of inner shoes or liners between casing and tube.

4. Do the makers of the $1,500 cars use the same kind of material in the gears and bearings of their cars as the makers of the $3,000 or $4,000 kind?

5. Who designed the motor used in the Chalmers "30" for 1910?

6. If ether is put into a gasoline tank, about 1-2 an ounce to the gallon, will it mix thoroughly with the gasoline and cause the same to be uniformly explosive throughout the whole mass?

J. S.

Cumberland, Iowa.

1. The differential would not be damaged.

2. The carbureter does not have to be changed at all.

3. See report of an automobilist in relation to reliners who gives advice to E. C. B. No. 2,541.

4. Difficult to say. There are many kinds of materials used for gears and the distinctions do not check up with the prices named for the finished products.

5. Ask the Chalmers Company.

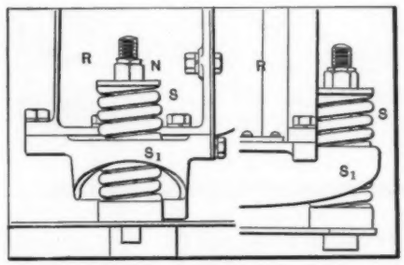


Fig. 7—Method of supporting the radiator on springs to absorb all the shocks that cause leakage

6. It is not safe for anyone but a chemist of experience in the vagaries of explosives to mix ether or other detonating elements with gasoline.

Radiator Leakage Due to Solid Fixing at the Base

Editor THE AUTOMOBILE:

[2,596]—Some time ago I noticed that the radiator on my car leaked at the joint in front where the two metal pieces are soldered together. I had this repaired and it has started to leak again in exactly the same place. The man who repaired it the first time tells me that I should fit pieces of rubber under the side plates that bolt to the frame. Do you think that this will remedy the defect? L. M.

Ontario, Can.

Your trouble arises from the fact that when the bolts that hold the radiator to the frame are pulled tight the radiator is strained at the sides forming the water tank around the tubes. Rubber will take a certain amount of the pressure from the parts, but most cars are now being fitted with some cushioning device to absorb the road shocks. Referring to Fig. 7 the radiator trunnion S1 rests upon a spring S, which is adjusted by the nut N. With this means of suspension it is necessary to secure the radiator at the top by means of a tie rod to the dashboard.

Valve Timing Is a Progressive Undertaking

Editor THE AUTOMOBILE:

[2,597]—Being a reader of your valuable journal, I would like to ask you the correct setting of the valves of a 2-cylinder motor. That is, the position of the head at the opening and closing the valves. I have had splendid success until some time ago I broke a crankshaft and put in a new one, I have experienced considerable trouble of late.

H. H. PURKHISER.

Mitchell, Indiana.

In the timing of a motor the process is substantially the same with one, two, four, or six cylinders, it being the case that the maker fixes the order of firing when he fashions the camshaft, so that the user may confine his effort to the timing problem, taking one cylinder at a time, and the diagram Fig. 8 shows the timing relation for one cylinder, which is another way for saying that it is for all the cylinders of a motor, since the timing should be identical in each of them.

In the Manufacture of Leather-Faced Cone Clutches

Editor THE AUTOMOBILE:

[2,598]—Will you kindly answer the following questions regarding leather cone clutches in the columns of your paper?

1. Which is better, a leather clutch turned and fitted on a lathe or one skived to the proper thickness and put on and not turned? What is the general practice of the manufacturers?

2. How much should a clutch leather project outside of the flywheel when new and under pressure of the spring.

3. What kind of tanning makes the best leather for clutches?

4. What taper should a leather be turned, the flywheel taper being 12° 30′?

5. If a clutch leather slips after being properly fitted and saturated with oil, and projects about 1-16 of an inch outside the flywheel and the spring is strong enough for the old clutch leather, what is the probable fault of the flywheel not having a ridge worn in it? W. P.

1. The best practice is to obtain the leather of the required thickness and stretch it over the face of the cone clutch, riveting as you go along, and skiving the ends so that they will present an even thickness, or making a butt joint.

2. The leather should not project outside of the face of the clutch at all. It is better to make the facing as much as a quarter of an inch narrower than the truncated cone of the clutch so that when the leather thins down under pressure and work it will not project beyond the face of the clutch proper.

3. Chrome leather seems to be an efficacious product.

4. A good taper is slightly under 10 degrees.

5. The probabilities are that the leather does not present enough surface to the facing member of the clutch. Poor workmanship and considerable variations in the thickness of the leather would produce the bad result referred to. The leather should be provided with springs between it and the cone for the purpose of pressing the leather into better contact. Cork inserts would of course solve the problem.

This Problem Is Handled Elsewhere in "The Automobile" This Week

Editor THE AUTOMOBILE:

[2,599]—I am a subscriber to THE AUTOMOBILE. I write to ask if you could give me some information about grinding the valves of a four-cylinder L-type motor. Any advice you can give me will be appreciated.

ENGINE.

Charlotte, N. C.

The Surfaces Will Have to Be Prepared for the Paint

Editor THE AUTOMOBILE:

[2,600]—Will you kindly give me, through your columns, the direction for painting brass lamps. G. H. EGGLEFIELD.

Keene Valley, N. Y.

Lamp makers claim that brass and other materials as used in the making of lamps are extremely difficult to paint satisfactorily. We believe that the surfaces would have to be sand-blasted, or otherwise prepared, after which the same character of finishing that a carriage-maker puts on a body will serve for the lamps. In THE AUTOMOBILE last week, the methods of finishing were given.

Send Your Lamps to a Fixture Man to Be Bronzed

Editor THE AUTOMOBILE:

[2,601]—What can I get in the way of a black enamel to go on my automobile lamps, so that I will not have to polish them as in the usual way?

E. F. CLAPP.

Marshall, Ill.

It appears to be a difficult thing to do. Makers of lamps say that the enamel will not stay on the polished surfaces of the lamps under ordinary conditions.

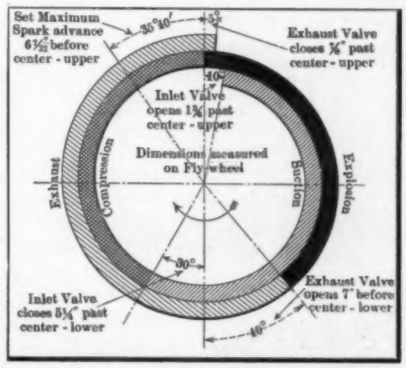


Fig. 8—Diagram of the setting of the valves of a four-cycle gasoline motor marked off in degrees on the fly-wheel.

When Judgment Whispers Don't

When the Senses Are Dulled Even an Alarm Clock Fails Its Purpose. Don't Select Such a Time for the Conduct of Important Negotiations

Don't put sandals on a sugar-coated mystery and try to palm it off on an unsuspecting automobilist.

Don't interfere with the working parts of the magneto; every part is supposed to fulfill a predetermined purpose.

Don't forget that improvement means to change to something better; when you improve a thing, be sure and make the change.

Don't give birth to an idea unless it has the makings of something better than that which is being used with success.

Don't try to wring tears from the eyes of a boiled potato by relating the pathetic condition of the man who elected to ride in the make of automobile that is not loaded down with the nameplate that you represent; it may not be so bad after all.

Don't forget that industry is one vast mechanism devoid of intelligence; furnish the intelligence.

Don't assume that the automobile business will continue indefinitely as the playground for the brainless enthusiasts; it is hard to supply a sufficiency of common sense to make up a balance.

Don't gather the impression that a crop of pessimists are ultimately to take charge, replacing the brainless enthusiasts—optimistic horse-sense would be a better ingredient.

Don't fail to distinguish between dirt-track racing and endurance contests.

Don't think of the dirt-track racing sport with all that the dirt implies if the subject is endurance contests.

Don't depreciate endurance runs and other ways of testing stock cars out of consideration for your views on the sporting events that have nothing to do with purchasable automobiles.

Don't support an undertaking that has no constructive merit; endurance contests have this merit.

Don't apply the philosophy that was taught by Aristotle to the dirt-track racing situation—there is no relation.

Don't cherish ideas that perform the functions of a summer-fly.

Don't assume for a moment that the idea which emanates from the promoter of dirt-track racing will be the centerpiece in the kingdom of perpetual light.

Don't persecute yourself in an attempt to find a relation between a specially built racing car and a stock automobile.

Don't apply the doctrine of permutation to the racing automobile situation; a specially built racing automobile is not even a cousin to a stock car.

Don't try to show that a racing automobile is of the same persuasion as a stock car.

Don't bow to the perverseness of the racing idea, nor fail to support the stock car contest situation.

Don't turn a profitable situation into a pestilence; it is enough to take advantage of the kind of contests that try the qualities of stock cars and tell purchasers what they may expect.

Don't chime in with a pettifogging promoter who will throw dust in your eyes while he takes money out of your pocket.

Don't put a pint of lubricating oil into the container and spill a quart of this precious fluid all over the surfaces.

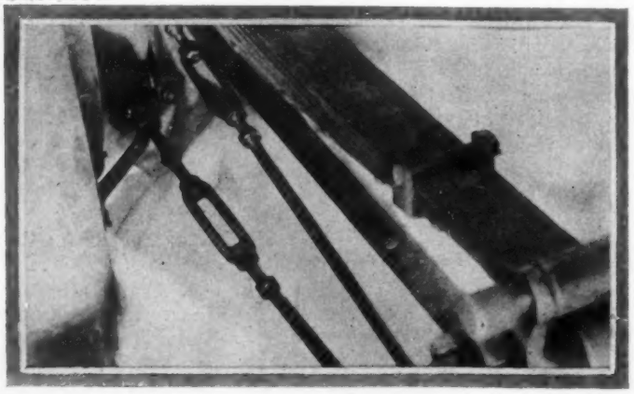
Don't allow lubricating oil to remain on the surfaces of the machinery; thus disposed it is the magnet that attracts foreign matter.

Don't harbor the fallacious impression that lubricating oil does not wear out; its slippery properties depart, leaving a slimy mass.

Adjusting the Brakes

How One Owner Planned to Get Out of Trouble with the Braking Mechanism of His Car

THAT the brakes have to be adjusted at frequent intervals is a point that is well appreciated by the experienced automobilist, and in the average automobile it is quite an undertaking. Granting that permanence of adjustment is necessary, the fact remains that ease of making these adjustments is attractive. In the illustration as here shown, it was the idea of the owner of the automobile that a good set of turnbuckles would accomplish the object, i. e., permit of easy adjustment from time to time, and by virtue of lock-nuts maintain adjustment in service without danger of having the same change while the automobile is in service on the road. The distance rods were of circular section and all that had to be done was to take them off of the car, cut them in two and thread the ends to fit the threads of the turn-buckles. One of the threads was cut right-hand, and the other was cut left-hand; this is necessary in the case of a turn-buckle. Instead of having to undo the distance rod at the terminal in order to make an adjustment all that has to be done is to back off on the lock nuts of the turn-buckles and screw up on them. It is a good idea in this undertaking to count the number of turns that are made so that the alignment of the axle may be maintained. It will be understood that it is necessary to keep the alignment of the axle, for otherwise the tires will suffer, since they will be prevented from rolling along parallel to the chassis frame and in the general direction of the automobile as fixed by the travel of the front wheels.



Depicting the method that was used in applying turn-buckles to distance rods in order to render the making of adjustment relatively simple.

Systematic Trouble Hunting

By a Process of Elimination, Treating with the Known Quantities, the Troubles are Discovered, When They May be Eliminated

CONTINUING the effort of last week under this heading, additional cases are cited, setting down the known quantities and suggesting the situations that might be at the bottom of any trouble that is being experienced. System is the greatest influence for success in any undertaking, and for the automobilist on the road who is having trouble, to proceed systematically is to find the disorder in the shortest possible time. Some automobilists when they get into a tight situation work themselves into a state of mind that either borders upon fury or superstition, and in this condition they find themselves incapable of coping with even a minor difficulty, whereas by working according to some system, maintaining a cool demeanor, the most stubborn difficulty will bow to treatment and the pleasure of touring will be free from harassing incidents.

The previous history of the automobile should not be lost sight of when trouble is being experienced, and if the car is a second-hand one, with which the automobilist has had no previous experience, it will be good business on his part to make a clean breast of it and determine once for all just what he may expect from it. It is not difficult to make a repair even on the road, but it is a serious matter to get lost in a maze of uncertainties. In dealing with unknown quantities the first point is to deliberate, acting only when the facts are known and the mind is clear. It has been said that algebra is perfectly simple to the man who can reason, and it has been found that almost every problem is easy of solution by a reasoning process, leaving it to the mathematician to do all of the figuring. In the same way by deduction it is possible to so isolate trouble in a car that all that remains is to fix it.

Case No. 4—Motor Will Not Operate

If the compression is normal.
If the carbureter is working properly.
If the battery is in good order.
If the magneto is doing good work.
If the wiring is free from trouble.
If the timing is in good order.
If there is no sign of a spark.

It Stands to Reason

That the trembler contacts may be worn.
That the trembler contacts may be stuck together.
That the trembler may not be adjusted properly.
That the primary winding may be short-circuited or grounded.
That the primary winding may have an open circuit.
That the brushes leading from the primary may be worn out.
That the spring behind the primary brushes may be weak.
That dirt and grease may have accumulated around the brushes.
That there may be an intermittent short-circuit of the primary connections.

Case No. 5—Motor Will Not Operate

If the compression is normal.
If the carbureter is in good working order.
If a spark shows at the trembler of the coil,
If the battery is in good order.
If the timer is in good order.
If the primary windings and connections are in good order.
If the ignition fails.

It Stands to Reason

That the secondary wiring is short-circuited.
That the secondary winding has an open circuit.
That a spark plug is short-circuited.
That a spark plug gap is excessive.
That the secondary winding has an open circuit.
That the secondary winding has a short-circuit.
That the ground connections are not good.
That the trembler of the coil is not working.
That the trembler adjustments are loose.

Case No 6—Motor Will Not Operate

If the compression is normal.
If the carbureter is working properly.
If the timing is in good order.
If the wiring and connections are good.
If the ground connections are all right.
If there is no spark at the spark plug.
If there is no spark at the trembler.
If there is no spark at the timer.
If there is no spark at the storage battery terminals.
If there is no spark at the dry battery terminals.
If the battery is old and much used.
If the wiring is old and shabby.

It Stands to Reason

That the battery is dead.
That the storage battery is sulphated.
That the storage battery is discharged.
That the storage battery is short-circuited by mud in the bottom of the cells.
That the storage battery is short-circuited by defective separators.
That the storage battery active material has fallen out.
That the storage battery is cold.
That the storage battery is short of electrolyte.
That the storage battery electrolyte is weak.
That the storage battery electrolyte is too strong.
That a jar of the storage battery is broken.
That the dry-cells are dried out.
That the zinc element of the dry-cells is eaten away.
That the dry cells are polarized.
That the dry cell contacts are poor.
That the wiring to the dry cells is defective.
That the primary batteries are run down.
That the primary batteries are polarized.
That the primary battery elements are eaten away.
That the primary battery electrolyte is lacking in quantity.
That a primary battery jar is broken.
That there is inter-cell leakage between the jars.
That there is an excess of local action.
That the cells of battery are full of foreign matter.
That the battery is too small for the work.
That the number of cells of battery in series is insufficient.

Case No. 7—Motor Will Not Operate

If the compression is normal.
If the carbureter is working properly.
If the timer is in good order on the battery ignition side.
If the battery ignition wiring is in good order.
If the battery is in good order.
If the spark coil is in good order.
If a spark shows at the spark plugs.
If the magneto ignition will not work.

It Stands to Reason

That the spark plugs are defective.
That the spark plugs are sooted up.
That the magneto is not properly timed.
That the secondary wiring is out of order.

Gear Problem in Overhauling Work

In Repairing a Car the Owner Thereof Is Confronted by a Difficult Situation in Connection with the Gears

DEPRECIATION of an automobile is confined for the most part to bearings, gears and the functioning members of the motor. Confining this discussion to the gear situation, it will be in order to classify the gears that are used in an automobile, and to state the duties under the heads of the respective classifications. Beginning with the motor, the halftime gears are the most prominent, they being composed of a pinion on the front end of the crankshaft, meshing with a gear on the camshaft, if there is only one camshaft in the motor, and meshing with the gears on the camshafts if there are two such shafts employed. In some motors an idle gear is used in the halftime train. At all events, the pinion has half as many teeth as the number of teeth on the camshafts, so that the camshafts travel at half of the speed of

the crankshaft. As a rule, the pinion on the crankshaft is made of a good grade of steel, and it is keyed onto the shaft, sometimes with a parallel fit and on other occasions with a taper fit. It is necessary that the pinion shall press onto the crankshaft, making a tight fit, and that the key shall be well fitted. This is not always the case, but in view of the fact that the pressure is a variable, due to the working of the cam, the pinion will loosen up and creep off the shaft unless it is a tight fit, and the key will give trouble also unless carefully fitted and driven home.

Sometimes the camshaft gears are made of rawhide with shrouds, on other occasions they are of cast gray iron, and in a number of examples the gears are made of steel. No matter what the material may be, noise will result unless the gears and the pinion on the camshaft are so accurately fitted that pressure will come on the pitch line of the gears and the pinion. This accurate fitting may be consummated when the motors are new, but when the average repair man scrapes in a crankshaft it is highly improbable that he will so center the same that the pinion on the end of the shaft will hold to the true axis by means of which the pinion will be in proper relation with the gears on the camshaft. If the front end bearing of the motor is scraped a little too much, the workman may succeed in effecting a good fit of the bearing, but the crankshaft will be down as compared with its original position, and the halftime gears will be noisy, owing to the pinion being out of true mesh with its mates.

It is extremely important that the halftime gearset shall be in good order, with the gears and the pinions tight on their shafts, and that the shafts be properly centered, taking into account the mathematical relation between the pinion and the gears. The possibility of trouble in connection with the scraping in of a crankshaft, as will be plainly seen, is not merely limited to the fitting of the crankshaft bearings. The crankshaft must be parallel to the camshafts, and the centers between the crankshaft and the camshafts must be dictated by the pitch of the halftime gears, considering the number of teeth thereof.

Transmission Gears Have to Be Redressed if They Are Partly Worn or Replaced if Noiseless Performance Is the First Consideration

When a car is being overhauled and the cover is removed from the transmission gearcase the owner of the automobile will be able to see at a glance whether or not he will be in for the considerable cost of the replacement of the transmission gears. If the teeth of the gears are badly battered and worn, and the owner of the car desires a noiseless performance, he might just as well make up his mind to send to the maker of the car for a new set of gears. If, on the other hand, a little noise is to be tolerated, and the gears are not badly worn, the treatment as shown in Fig. 2, in which the teeth of a gear are being dressed, by holding the gear with two hands against the face of an emery wheel, offers possibilities, it being the case that the burrs and other irregularities may be ground off, preliminary to the dressing operation as shown in Fig. 3. In the dressing of the gears the first requisite is a good file, and the workman who undertakes to do this class of dressing should be the type of man who can display considerable deftness, a measure of skill in benchwork and much of patience. It is a slow job, and, the gears being hard, the file will be destroyed in the hands of a novice, who will make very little headway in the process.

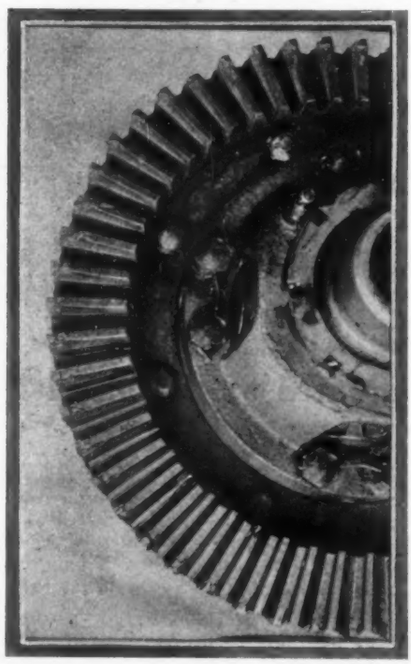


Fig. 1—Showing a bevel gear that was run dry, resulting in the chipping of the teeth and other indications of excess depreciation

Fig. 1 illustrates a type of difficulty that may be traced to a considerable extent to the failure on the part of the owner of the car to lubricate the gears, and in some examples of automobiles trouble of this sort comes from the use of inferior gear steel. If the steel is poor, however, it is all the more reason why the gears should be lubricated, and taking the example as here shown, it is a question of moment to decide whether or not this gear should be redressed and used for another season. If the teeth of the gear continue to chip in the manner as shown, and the chips get into the ball bearings, and down into the meshing teeth of the differential, the damage that will be done in this way will far exceed the cost of a new bevel set. If it is decided to replace the bevel gear, it must be concluded also that the bevel pinion will have to be replaced, due to the fact that noise will result if an old pinion is used in connection with a new gear. It is more than likely that the right idea in a case of this sort is to replace the gear and pinion, and, having learned the lesson that an experience of this kind should teach, the automobilist will go to some pains to lubricate the gears as well as the bearings throughout the car.

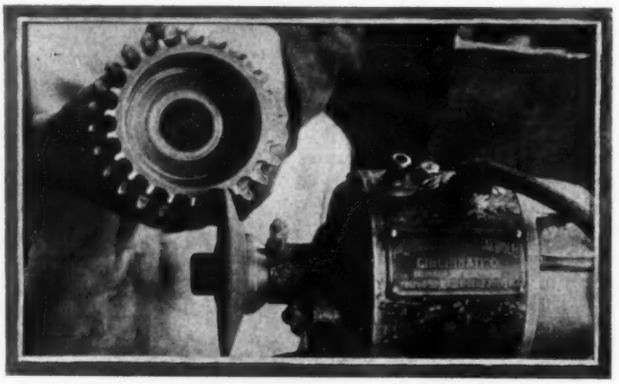


Fig. 2—Showing an emery wheel on an electric motor for use in grinding burrs off gears

Depreciation Is Enormously Increased if the Lubricating Problem Is Left to Chance, and if Foreign Substances Fill the Spaces That Should Be Devoted to Lubricating Work

Lubricating mediums, as oil and grease, wear out just as everything else depreciates with time and service, and the gummy mass that remains when the lubricating properties disappear from the oil or the grease is a detrimental substance, so that the crime of failing to clean out the bearings and the cases, supplying new lubricating oil or grease in place of the worn-out product, leads to trouble in two directions, the first of which is due to the absence of a lubricating medium, and the second trouble will come on account of the deleterious effect of the slimy mass that the lubricant is reduced to in the course of time.

The worn-out lubricant may have an acid reaction, in which event it will etch the polished surfaces of the balls and raceways of the bearings, and other parts, or it may be permeated with small particles of metal and chips from the teeth of the gears, so that instead of being a lubricant it would be a most efficacious abrasive medium, serving every purpose for which a

grindstone or an emery-wheel is usually employed. It will readily be seen that while lubricating oil is the greatest agent in favor of long life and the minimum of depreciation, it is also a broad avenue that leads beyond these much-desired conditions to grave dangers, and the final destruction of the machine. A very large percentage of the trouble that comes to the average automobilist is due to the fact that he thinks a drop of oil will last forever, and he overlooks important details in the principle of lubrication, failing to remember that (a) the lubricating oil is only good for lubricating purposes while it remains in the unctuous state, and (b) foreign substances can only be kept out of the bearings if they are full of lubricating oil. The last condition named suggests the idea that a slight excess of lubricating oil in a bearing will seal the same against the incoming foreign substances, it being the contention that if the excess oil is passing out the foreign substances cannot enter.

What is true of the centering of the halftime gears will also hold when the gears in the transmission case are being centered, and noise will result unless the distances between the shaft are such that the gears will roll on their pitch lines. Remembering that the gears in the transmission system are hardened, and that the process employed for this work is likely to result in the

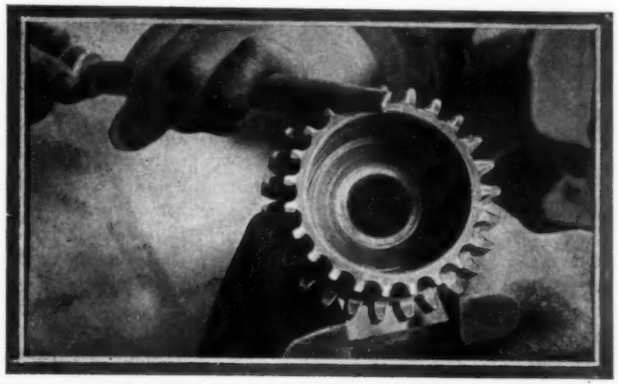


Fig. 3—Showing a workman with a file taking the burrs off gears that were considerably worn in service

warping of the gears, it is generally true that the most noiseless performance is found by experiment. It is worth something to the repairman to know the distances between centers of the gearshafts, as the car came from the maker, if it is true that the car was noiseless in its performance at that time. In connection with the bevel gearset, there is nothing to do but to find the relations that will produce a more or less noiseless condition, and in quite a number of the makes of cars on the market adjustments are provided whereby the bevel gear relations may be established while the gears are in motion, and these relations are fixed under the conditions of least noise. It might be too much to expect that a repaired bevel set would be quite noiseless, but there is no reason why the owner of the car should give up in despair, when, in all fairness, a little care and attention to the adjustment of the teeth will ameliorate the noise condition and give the owner another year's service out of his car.

As to Gasoline Piping

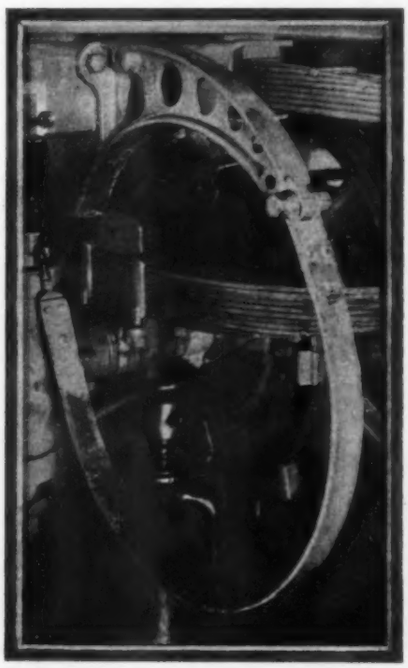
A Prime Requisite for Pipes Used for This Purpose is Strength—Size Must Not Be Disregarded.

LIQUID fuel reaches the carbureter through copper piping, impelled by either pressure on the fuel tank, or if the tank is elevated, through force of gravity. It is not uncommon to find the piping a little too small in diameter, too flimsy to possess the requisite endurance, and most likely to become obstructed by jelly formations, or from other causes. The building laws require a 4-inch pipe as a minimum size for sewer connections, not because a smaller pipe would be too small to conduct away the sewage, but for the reason that the 4-inch size will not dam up of its own volition. The same holds for gasoline pipes, but, fortunately, a 4-inch pipe is not necessary to prevent the dam. A 3-8 inch pipe serves very well indeed, and it is also mechanically strong enough to possess the requisite endurance. This piping will be a little heavy, to be sure; but it would be better to use less castings elsewhere and have the gasoline piping in more stable shape.

Method of Supporting Gasoline Tank

Stoddard-Dayton Plan of Strapping the Gasoline Tank to the Rear End of the Chassis Frame

STRANGE as it may seem, there are very few of the racing drivers of experience who are not in a position to relate the loss of the gasoline tank during some feverish race, thus indicating that gasoline tanks are not as innocent as they look and that they have to be tied down with considerable care, if it is to be expected that they will stay where they are put. One reason why a gasoline tank is troublesome in this regard is due to the fact that the tank, including the gasoline contained therein, weighs from 250 to 300 pounds, and the centrifugal force of this concentrated weight when the car is going around a curve at high speed is sufficient to tax the ability of the average fastening employed. The second reason, however, for the trouble of this character that is frequently experienced is due to the piling up of the gasoline in the tank, when the same is not full, and when the automobile is going around a curve of short radius at high speed. Baffle plates are usually employed for the purpose of preventing the swashing of the liquid, but even under the most favorable conditions the gasoline will rush to one end of the tank, and the repeated blows that are thus struck have the effect of pushing the tank endwise away from its fastenings. The scheme as shown in the illustration indicates that the designer has given these details considerable thought, and the tank in its position back of the chassis frame is accessible for quick and thorough inspection from time to time, thus giving the owner of the car an opportunity to observe if there is any depreciation, and to tighten up the holding bands from time to time. The curved bracket is fastened to a crossbar of the chassis frame just inside of the three-quarter elliptic spring, and the bolts which are placed to hold the bracket to the crossbar are advantageously employed, so that the tight-fitting flanging of the bracket embraces the underflange as well as the web.



Method of fastening the gasoline tank to the back of the chassis frame as exemplified in Stoddard-Dayton cars

1911 Racing Outlook

Principles Involved in Contest Work Are So Diversified That Differences of Opinion Are Unavoidable

TIME lays bare the advantages and the evils of a plan, and in contest work there are three points of view, namely, as the user sees it, from the maker's angle and as the "sport" would have it. Ten years of racing, under all sorts of conditions, are enough to show that if the sport has his way the maker will lose money, and in the vernacular of the day the user will get "stung." It is not strange that these differences should appear on the surface, particularly if it is remembered that the makers of automobiles are busy at their respective tasks; and as the users of cars are industriously applying their talents in the process of making their investments pay, the sports are the only ones who have the time and the inclination to either do nothing gracefully or do somebody else if they get a chance.

Racing *per se* as it was inherited from the horse era furnished enough experience with the sport type of man to lead honest men to the conclusion that there may be a certain type of honor among thieves, and that a "gambler's" word is to be relied upon among gamblers, but it is not believed that the makers of automobiles are gamblers, although the users of cars do some gambling when they rely upon the statement of the race track man that the car that won is a replica of the model that the user would have to pay good money for.

It will be a sad day for the automobile business when the users of cars sit back in their "Morris chairs" and say "show me." But this is exactly what they are going to do in the near future if race-track methods continue to be what they were in the past. The makers of automobiles seem to be fully alive to the dangers that come from having "wicked" partners, and the Manufacturers' Contest Association, as it is organized for 1911, is trying to bring order out of chaos. In THE AUTOMOBILE of March 2 the rules governing contests were given in full, and in THE AUTOMOBILE of March 23 the rules governing reliability runs were also given in full. An examination of these rules would seem to indicate that the companies have in mind a sharp line of demarcation between contests and reliability runs. President Benjamin Briscoe, of the United States Motor Company, in a special interview, which was printed in THE AUTOMOBILE of March 23, placed himself on record as absolutely opposing contests, and in a second interview with the Editor of THE AUTOMOBILE at a later date Mr. Briscoe stated his belief in reliability runs, for, as he said, the users of automobiles are enabled to take an interest in a reliability run or a hill climb and the makers of cars are enabled to try out their models, ascertaining if they are up to a fitting requirement, and the benefit thus derived is twofold in that the makers find the troubles that may reside in their regular models, and users gather information that will be of service to them when they go in quest of a car.

Mr. Briscoe points out that contests such as the Vanderbilt last year serve no such purpose, since the automobiles that are entered in these contests are rarely ever "stock models." As he says, someone must be responsible for the killing of the men, and an honorable gentleman in the automobile business can scarcely afford to have these murderous situations dangling on his conscience. Mr. Briscoe did not point out that the murdering that was done on the Vanderbilt track last year was due to the absolute mismanagement or deliberate failure to make adequate provision for the handling of the cars and the spectators. Some of the newspapers stated at the time that the promoters of this event were perfectly willing to take in all the money they could, and that they exhibited a certain hunger in this connection, but a close examination of the course failed to show that care and precision of preparation, such as might be expected if automobiles of the racing type are to tear along the road at a terrific pace, making curves at a hair under the turning-over speed.

Fairness Should Characterize the Efforts of Those Who Have Charge of Racing, Which Means That Fair Men Must Be in Command of the Situation

We do not recall that any official made a very clear statement of the reason why the Vanderbilt course was in the condition that it was found to be on the morning of the race, but Mr. Briscoe points out that the men who were not killed outright are being patched up as best they can, and his contention seems to be the right one in this regard; in other words, it is too much to expect that a Christian gentleman can carry these matters on his conscience and continue to pursue a course which, if it is under the same conditions year after year, will produce identical results.

It is difficult to say just who should be held responsible for the murderous work that was done on the Vanderbilt track, but

the makers of automobiles and the public at large should have this matter adequately explained before any further chances are taken. The men who were responsible for the results that were realized on that occasion will have great difficulty in convincing the public at large—and, let us hope, all the makers of automobiles—that they are competent to conduct racing events, or that they have a sufficient regard for the lives of the men who enter these races to warrant placing them in charge of any new venture along these lines.

The public at large has gathered the impression that the timing of races is now a mathematically precise situation, and even the men who participate in these events have a certain respect for the methods that are employed. In the meantime, as an illustration of the principle that is here involved, it is enough to say that the most accurate chronometer that man can devise would be useless in the hands of an incapable captain of a ship, and the same thing applies to the equipment that is employed in the timing of races, since, if the men are dishonest or incompetent, the apparatus will reflect the inaccuracies that must follow under such conditions. In the Vanderbilt event, for instance, the Editor of THE AUTOMOBILE timed the starting of the cars, and there was a difference of 9 seconds between some of them as they crossed the line. This means that some of the cars might have had an advantage of 9 seconds over the others, and when automobiles are making the very high speed that was claimed for the entrants in the Vanderbilt event 9 seconds means win or lose. There was no timing apparatus employed on this occasion in starting the cars that would detect this difference at the time of starting.

In reliability work all these opportunities are reduced to a nominal point, owing to the fact that the slight advantage that might be gained if some one car is favored at the starting point would amount to almost nothing in a ten-day run. Those who may not have had experience with contests and the problems of regulating them would scarcely appreciate the enormity of the undertaking, and it is the purpose here to point out the difficulties and the effect that they have upon the result, rather than to indicate that a difference of 9 seconds in the starting of the cars at the Vanderbilt track, for instance, was anything more than an incident of the moment, unavoidable, perhaps, under the conditions governing the running of the race.

But even reliability runs may prove to be unsatisfactory, especially if the promoters are but little concerned from the point of view of the makers of cars or with the good of the industry. As an illustration of a poorly conducted affair reference may be made to a truck run that was held in New York City last Fall. The results of this run were not made know promptly at the conclusion of the run, and quite a number of the contestants labored under the impression that the delay in announcing the result was not in keeping with the ethics of events of this character; moreover, it was the opinion of those who took some interest in the matter that the rules were not scrupulously observed, and a charitable interpretation of the whole situation would be fully expressed were one to infer that there might have been some mismanagement attached to this event.

In horse racing, as it has been conducted for a great many years, the announcements are made at once; any delay whatever would cast suspicion upon the judges. Experience has shown that a belated decision at a race track points to crooked judges.

In a canvass of the whole situation as it was made by the Editor of THE AUTOMOBILE within the last few days the evidence that has been produced would seem to indicate that reliability runs, under fair conditions, with managers who are beyond reproach should prove of value to the automobile industry, and, according to information that was imparted by Howard E. Coffin, president of the Manufacturers' Contest Association, good progress is being made, and Mr. Coffin further stated that the services of experienced officials are assured. Howard Marmon, vice-president of the Manufacturers' Contest Association, states that a canvass reveals the interest that a large number of the makers of cars are taking in contest affairs, and he is also authority for the statement that university students will be utilized as observers.

There Are Other Phases to the Racing Situation This Year—Racing Drivers Are Undertaking to Organize for Their Common Good

The best expression of the poor satisfaction that has been realized in the past is reflected in the undercurrent and the considerable activity that is being indulged in from every point of view. The racing drivers of national fame seem to be as much dissatisfied as anyone, and they no doubt hope to ameliorate their situation by forming an association—in other words, a union—but whether or not they propose to resist any unfair methods that may be put upon them by promoters, or take the makers of automobiles by the throat, or take the public into their confidence, is a matter which has not been related.

If the drivers organize and make a concerted effort to present a square deal, considering the firm resolve on the part of the majority of the makers of automobiles to go in for stock car events, the public will have nothing to fear of the result.

Coming Events

Catalogue of Future Happenings in the Automobile World That Will Help the Reader Keep His Dates Straight—Shows, Race Meets, Runs, Hill Climbs and Other Events.

SHOWS AND EXHIBITIONS.

Mar. 25-Apr. 8	Pittsburg, Fifth Annual Show, Duquesne Garden, First Week, Pleasure Cars; Second Week, Commercial Trucks, Automobile Dealers' Association of Pittsburg, Inc.
April 12-15	Sioux Falls, S. D., Annual Show.

RACE MEETS, RUNS, HILL-CLIMBS, ETC.

April 8-9	Los Angeles, Cal., Twenty-four Hour Track Race, Los Angeles Motordrome.
April 12-15	Sioux Falls, S. D., Annual Show.
April 15	New York City, Commercial Vehicle Parade, Motor Truck Club.
April 22	Redlands, Cal., Annual Hill Climb.
April 29	Guttenberg, N. J., Track Races.
Date indefinite	Oakland, Cal., Track Races, Oakland Motordrome.
Date indefinite	Shreveport, La., Track Races.
April 29	Philadelphia-Atlantic City Roadability Run, Quaker City Motor Club.
May 16-19	Washington, D. C., Four-Leaf Clover Endurance Run, Automobile Club of Washington.
May 19-25	Glidden Tour, Washington, D. C., to Ottawa, Canada.
May 25	Chicago, Ill., Fuel Economy Test, Chicago Motor Club.
May 27-31	Chicago, Ill., Five-Day Tour to Indianapolis, Chicago Automobile Club.
May 29-31	Chicago, Ill., Tour to Indianapolis, Chicago Motor Club.
May 30	Indianapolis, Ind., Five-Hundred-Mile International Sweepstakes Race, Motor Speedway.
June 22	Algonquin Hill Climb, Chicago Motor Club.
Aug. 25-26	Elgin, Ill., National Stock Chassis Road Race, Chicago Motor Club.
Oct. 9-13	Chicago, Ill., Thousand-Mile Reliability Run, Chicago Motor Club.

FOREIGN FIXTURES.

April 16-23	Prague, Austria, Annual Show.
April 23-28	Modena, Italy, Touring Car Contests.
May 1-15	Turin, Italy, Automobile Salon.
May 7	Sicily, Targa Florio Road Race.
May 14	Barcelona, Spain, Catalona Cup Road Race.
May 21	Ties, Austria, Hill-Climb.
May 25	Meuse Hill-Climb, Belgium.
May 25	Le Mans, France, Touring Car Kilometer Speed Trials.
May 28	Le Mans, France, Hill-Climb for Touring Cars.
May 28	Start of Touring Car Reliability Trials in Germany.
June 1	Bucharest, Roumania, Speed Trials.
June 4	Trieste, Austria, Hill-Climb.
June 18	Boulogne, France, Voiturette and Light-Car Road Races.
June 25	Sarthe Circuit, France, Grand Prix of Automobile Club of France.
June 25-July 2	International Reliability Tour, Danish Automobile Club.
July 5 to 20	Start of the Prince Henry Tour from Hamburg, Germany.
July 9	Susa-Mont Cenis Hill-Climb, Italy.
July 13-20	Ostend, Belgium, Speed Trials.
July 21-24	Boulogne-sur-Mer, Race Meet.
Aug. 6	Mont Ventoux, France, Annual Hill-Climb.
Sept. 2-11	Roubaix, France, Agricultural Motor Vehicle Show.
Sept. 9	Bologna, Italy, Grand Prix of Italy.
Sept. 10-20	Hungarian Voiturette and Small-Car Trials.
Sept. 16	Russian Touring Car Competition, St. Petersburg to Sebastopol.
Sept. 17	Semmering, Austria, Hill-Climb.
Sept. 17	Start of the Annual Trials Under Auspices of *l'Auto*, France.
Oct. 1	Gaillon, France, Hill-Climb.

THE AUTOMOBILE

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The Automobile is a consolidation of The Automobile (monthly) and the Motor Review (weekly), May, 1902, Dealer and Repairman (monthly), October, 1903, and the Automobile Magazine (monthly), July, 1907.

CONSERVATIVELY estimated, the automobile business in New York City alone, during the past year, represented an initial outlay of sixty million dollars, and these figures are independent of repair charges or other money transfers that must necessarily follow in the footsteps of an industry. In addition to the 21,000 automobiles that were taken by the citizens of New York City, it has been estimated that over 12,000 automobiles were distributed by sub-agents to buyers in contiguous territory. Remarkable as these statistics show the automobile business to be, it remains to be said that the great question lies beyond. Depreciation is the worm, so to say, that eats the heart out of an investment and turns the effort into more or less of an economic liability. If the rate of depreciation of the average automobile is 20 per cent., which means that the cost of maintenance of the automobiles purchased during the last year will be $12,000,000, counting depreciation only, and if this rate of depreciation can be reduced to 10 per cent. it means that the community will be $6,000,000 in pocket at the end of the period, at no greater cost than that represented in the display of a little prudence.

* * *

INDICATIVE of the divergencies in the make-up of man, mention will be made of the fact that a great merchant, whose ability brings him, let us say, $100,000 per year as the increment for personal effort, shows threadbare when he attempts to direct the movements of an automobile, due to the fact that he has no mechanical judgment whatsoever, and, in the absence of this necessary qualification, he puts prudence to sleep and drives his automobile as fast as it will go with never a thought of the rate of depreciation that will result from his poorly directed effort. It is this type of man who is entirely at fault for the high rate of average depreciation of automobiles, and it is a great misfortune that he sets an example to be followed by the owners of cars who are not in a position to tolerate the costs that prey upon the user who shows his inconsistency by feeding sugar to a horse and driving an automobile as if he were trying to get away from the grim specter.

* * *

EXPERIMENTS are being made on solid hydro-carbon fuel, and the indications are that this type of fuel will be used in the future automobile, partly because solid matter will not leak through a pinhole in a tank, and again in view of the possibility of combining kerosene oil with the more volatile fractions of the hydrocarbon distillates, thus leading to a condition of much-to-be-desired economy. Moreover, there is promise of the possibility of eliminating the carbureter, and the thermal efficiency will be improved because a solid fuel must be heated up at the expense of some of the waste products of combustion from the heat point of view, to render it fit for service. Solid gasoline, so called, as it is being made for experimental purposes, is composed of the liquid fractions of the hydrocarbon distillates combined with stearin, to which a little caustic soda is added. The hydro-carbon content is over 98 per cent. In considering solid fuel, account should be taken of the fact that its volume is probably not far from 85 per cent. of the volume of liquid automobile gasoline, so that in addition to its better state for storage purposes it occupies less space, and from the safety point of view, solid gasoline is vastly superior to any other form of concentrated fuel to which the attention of the automobile engineer has been brought.

* * *

STAGNATION is the disorder that shackles the indolent type of man and allows him to court contentment of mind with the nonchalance of a stoic. But when our colored brother, gazing at the orb, said, "The sun do move," he paid tribute to a basic fact, although there is reason for believing that his analysis was a little shy. But the darkey was more far-seeing than the man who thinks that the automobile has reached a state of finality. Admitting that the automobile is the refinement of twenty-six centuries of activity of man, from the transportation point of view, the fact remains that the curve of effort has barely reached the "knee" of its upward sway, and with our better understanding of the needs of humanity, and the introduction of bold mechanical skill in the enterprise, it is not too much to expect that improvements will be introduced, one upon the other, superimposing them with terrific frequency, so that the "soothsayer" of the present time is no better off than his prototype of twenty centuries ago who was so fascinated with the idea that three horses chained to a lumbering chariot represented the peak of the wave of transportation ingenuity, that nothing remained to be done.

News Section

Happenings of the Week in Various Parts of the Country as Gathered by the 85 Special Writers and Correspondents of THE AUTOMOBILE.

Philadelphia Automobile Section Threatened by Fire—United States Government Is Considering Standards—New Automobile Company Established in the South—Postponements and Small Fields Mar the Pablo-Atlantic Beach Races—News of Interest Concerning Roads and Routes—Fifth Annual Show at Pittsburg a Huge Success—Watertown Exhibition Brings Trade—Variety of Short News From All Points

Quaker "Automobile Row" Visited by Fire

PHILADELPHIA, March 27—Automobile Row was swept last week by a fire that before it was extinguished consumed 40 machines, causing a money loss of $125,000 and temporarily putting out of commission the salesrooms of the firms affected. The establishments destroyed were the Stoddard-Dayton Automobile Company, Nos. 253-255 North Broad street, and the Longstreth Motor Car Company, and Auto Top & Body Company, occupying the adjoining buildings at Nos. 257 and 259.

The Auto Top & Body Company's plant was entirely destroyed and that of the Longstreth Motor Car Company, Philadelphia distributer of the Alco and Pullman cars, fared but little better, the entire stock on hand, amounting to 15 machines, being wiped out, entailing a loss of $40,000. So rapidly did the flames get in their work here that it was a physical impossibility to rescue any of the stock.

But the greater loss was sustained by the Stoddard-Dayton Company, 25 cars being hopelessly ruined and the money loss footing up to $85,000. By some rapid-fire action a few machines occupying the first floor of this building were hustled out.

Temporary quarters have been secured by the firms—the Stoddard-Dayton at the northeast corner of Broad and Race streets and the Longstreth Company is using one of the offices of the Firestone Tire & Rubber Company, 256 North Broad street, pending the rebuilding of the burned structure.

Government Meddling with Standards

A proposed law in relation to what is known as "The United States Standard" for taps and dies is the subject that is being discussed by the lawmakers at Washington, and if they do take decided action in this matter it is more than likely that other attempts at fixing standards will be made to compel the builders of automobiles to accept "rule-of-thumb" methods of doing their work, or violate what would seem to be a rule-of-thumb law. A well-known member is the keeper of this bill in its present form, and the information available would seem to indicate that the bill is in a fair way to be passed by the Senate, it having been passed by the House. Automobile makers are taking notice of the fact that their prerogatives are being usurped.

The United States standard for taps and dies is probably a good one to employ in the building of machine tools, and it is being much used in machinery of the many classes, but in the building of automobiles it has been found that this standard as it was originally promulgated is lacking in important respects, and automobile engineers, having reached this conclusion, arrived at a new basis which was crystallized by the Mechanical Branch of the A. L. A. M., and is known as the A. L. A. M. Standard.

If Congress decides to pass a law that will legalize the United States Standard and make it a compulsory matter for the builders of automobiles to employ it to the exclusion of any other standard we can wish the Congressmen no worse luck than will come to them if they buy some of the automobiles so made, in order that they will have to pay the cost of upkeep.

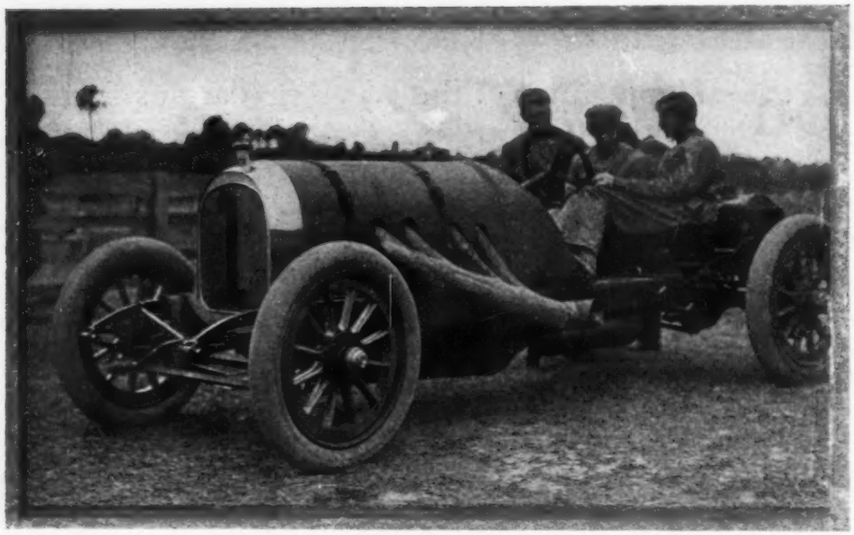
The automobile business is in need of attention from the standardization point of view, but the automobile engineers in the United States Senate, and in the House of Representatives, have never shown by their work that they are more capable of fixing the standards that shall obtain in the automobile industry than the men who spend their time and their money in the building of cars and who have to depend upon the quality of the work they do for their ultimate success.

South Taking to Automobile Making

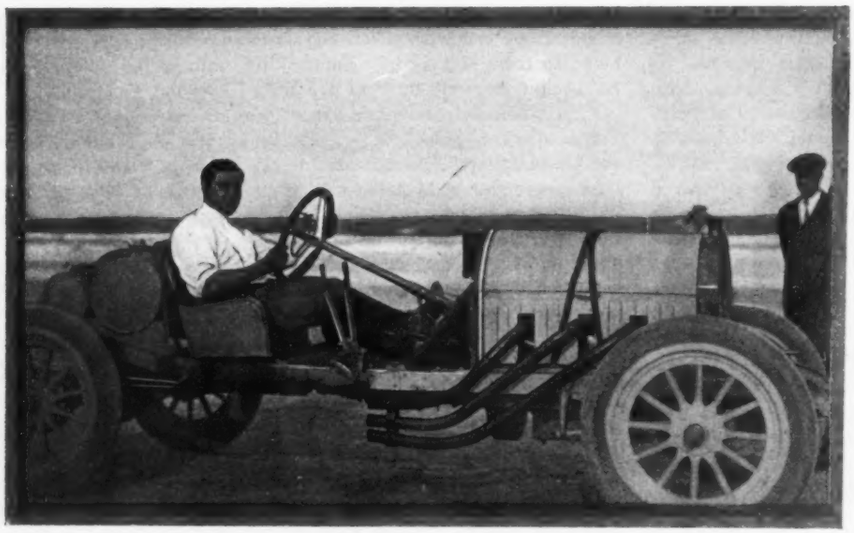
In Montgomery, Ala., the Great Southern Automobile Company has been organized to build automobiles. It was not until recently that the South made any headway in manufacturing, but the automobile business is penetrating the "cotton belt" and it is more than likely that the making of automobiles will be an important part of the industries of that great part of the country in the near future. The Great Southern Automobile Company, with headquarters at Montgomery, Ala., is capitalized at $1,000,000, to build automobiles, with E. F. Enstern as president of the company, backed by a strong board of directors. Much headway has been made and the first car is now on the road. Everything points to the success of this latest effort on the part of the progressive citizens of Montgomery, and that the South is ready to support local undertakings of this character is indicated by the interest that the Legislature of Alabama is taking in this particular project. The new model, according to the information at hand, is a 50-horsepower car along the most approved lines, and it is the purpose of the company to build the car complete, including the motor, transmission and other units, in its own plant, taking due notice of the Southern road situation and the needs of automobilists there.

Gramm Hose Wagons for New York

Advices received from the Gramm Motor Car Company are to the effect that the New York City Fire Department is soon to be augmented by the addition of twelve fire wagons equipped with Webb fire equipment. It would appear from this and other information that is available that the efforts of Commissioner Waldo to modernize the fire-fighting apparatus of the department in New York are bearing fruit.



The Pope-Hartford as it appeared in the one-hour race, driven by Disbrow



The Warren-Detroit Company presents its racing car, with Tower at the wheel

The Case car as it appeared on the beach under the direction of Strang

Racing at Pablo

JACKSONVILLE, FLA., March 28—Tidal conditions abridged the racing program to-day on the Pablo-Atlantic beach and only four of the events were run off. The fields were small and none of the finishes were of the hair-line order. Of the four events decided, National cars won two and took third money in two.

The day was favorable overhead, but the equinoctial tides are at their height right now and the lapping Atlantic put a stop to the sport quite as effectually as the man with the magpie flag could have done.

A big crowd turned out to witness the short program and apparently enjoyed the racing.

The first event carded was at twenty miles for non-stock cars of 600 cubic inches piston displacement and under, limited to 2,300 pounds in weight. There were three starters, two Nationals and a Pope-Hartford. The race was won rather easily by one of the Nationals (Merz) in the moderate time of 14:58.43, which is nearly a minute slower than even the speedway record for that distance.

The second event was the closest and best of the day. It was at 100 miles and resulted in a four-second victory for the Pope-Hartford entry in 1:15:25.29. The time was slower than the beach record for the distance by nearly three minutes and is slower than the speedway mark by about a minute.

The third event was a one-hour race in classes. The Pope-Hartford entry won the big class with 86 miles. The Mercer was first in its class with 80 miles and the Warren-Detroit annexed its class with 64 miles to its credit.

The five mile free-for-all was an upset to the talent. The Mercedes was selected by the wise ones to win off by itself, but a mishap settled its chances while out in front. The favorite broke first, got away with the gun and opened up a wide gap on the other two contestants in the early stages of the race. The National entry was a far-away second when the pacemaker entered the last mile and was wide open in an apparently vain effort to catch the foreigner. The Pope-Hartford was trailing at this stage and was out of it as far as first honors were concerned.

Then it was noted that the leader was in trouble and the National closing with a wild burst of speed caught the Mercedes and shot over the line a winner.

Nationals Feature at the First Day of the Meet on the Florida Coast

The disabled car limped in second ahead of the Pope-Hartford.

No definite announcement has been made as to the remainder of to-day's program. To-morrow the events scheduled for decision to-day will be carried, tide and weather permitting. The flying kilometer trials carded to-day were abandoned on account of failure to secure wire for the timing system.

Three stock car events are down for decision to-morrow at five and ten miles and the rest of the program is devoted to free-for-all and non-stock races.

The summary:

Car	Driver	Position	Time
First Event: Twenty miles, for cars of 600 cubic inches and under, non-stock.			
National	Merz	1	14:58.43
Pope-Hartford	Disbrow ...	2	15:15
National	Wilcox	3	
Second Event: One hundred miles, "E" Class, non-stock.			
Pope-Hartford	Disbrow ...	1	1:15:25.39
Buick	Burman	2	1:15:29
National	Merz	3	
Third Event: One-hour race, 231-300 cubic inches, non-stock.			
Mercer	Hughes	1	80 miles
161-230 cubic inches, non-stock.			
Warren-Detroit	Tower	1	64 miles
Fourth Event: Five miles, free for all, non-stock.			
National	Wilcox	1	3:45.34
Mercedes	Burman	2	
Pope-Hartford	Disbrow ...	3	

Salesmen Give Banquet

BUFFALO, March 27—The Automobile Salesmen's Association of Buffalo gave a banquet at the Teck café in this city.

James T. Kennedy, state treasurer, acted as toastmaster.

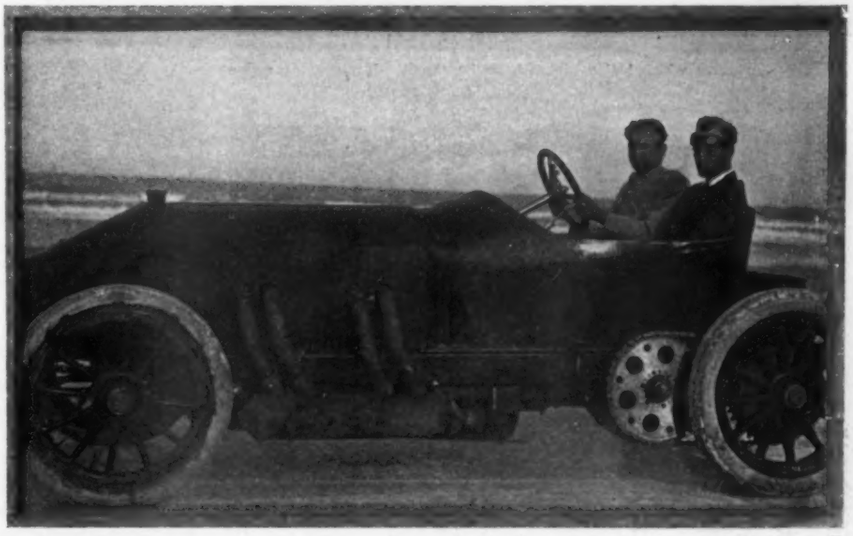
S. C. Collins, Edward Doyle, G. O. Mackey, Eugene Snyder, George Cramer and Warren Mernan entertained.

Lawrence Enos, president of the Automobile Club, was one of the principle speakers and he lauded the salesmen for their efforts in forming an association and he wished them success. He said the team work was what counted and he advised the young organization to pull together. James Wood Pogue spoke on the science of salesmanship, and J. E. Burton was another speaker. E. C. Bull, G. C. Miller and W. F. Polsom were guests.

The association was recently formed and the officers are: President, Charles O. Almendinger; vice-president, James T. Kennedy; secretary, Joseph C. O'Rourke; treasurer, Edward E. Denniston; board of directors, E. Ray Linsley, E. O. Van Houten, Jr., A. J. Henry, Frank E. Titus and Larson Butler.

The "mess" tent far back on the beach, to which the high tide made its way, preventing racing on Monday

The National Forty stripped for racing, with Merz at the wheel



Mercedes racing car, with Burman at the wheel, as it came in second

Roads and Routes

Office of Public Roads Is Taking Continued Interest in the Trans-continental Trip of a Truck

WHILE the army is maneuvering at San Antonio, Tex., having all kinds of trouble with animal transportation, and fighting with the railroad company because it will not congest its trackage by shunting cars, and doing other things that must be at a great cost, according to reports that are being received from day to day, the Office of Public Roads, under the direction of Dr. Logan Waller Page, is taking a keen interest in the performance of the Saurer truck that is being driven by A. L. Westgard from the Atlantic to the Pacific, and the illustrations here afforded show something of the roads that are being traversed, and the nature of the difficulties that beset the undertaking, but it will be self-evident to those who give the matter attention that these troubles are not insurmountable; moreover, they would be just as formidable for animal transportation as they are for the automobile.

If an automobile is confronted by bad roads, it at least has the advantage of making higher speed when the roads are good, and it therefore has a more flexible schedule, since by traveling fast along good roads time is afforded for such work as may have to be done when obstructions are encountered. The last report from A. L. Westgard was dated Albuquerque, N. M., this point having been reached by way of Las Vegas, via Santa Fé. Local celebrities are taking a great interest in the performance of this truck all along the trail, and in a personal interview with Governor Mills the questions of good roads were discussed at some length, and there is excellent reason for believing that a distinct and aggressive movement will take place in the very near future. It was said that Bernalillo County, New Mexico, was noted for having the worst roads along the route, but the good citizens of this country felt the stigma of this character of reputation, and having raised $10,000 to be expended in the improvement of the roads an effort is being made to place them upon a tolerable level. In the neighborhood of Las Vegas the going was found to be particularly bad, but there is a project on for the grading of the road between this place and Santa Fé.

Fig. 1—An event which had to do with an impoverished culvert near San José, New Mexico

Fig. 2—A narrow passageway in a sand cut near Algodones, New Mexico

Fig. 3—Coasting down the La Bajada, lava cliffs, south of Santa Fé

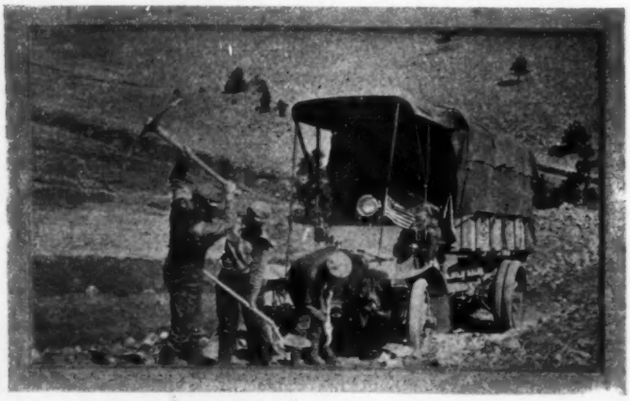


Fig. 4—A little road building for the benefit of the Saurer truck

After a short stop at Albuquerque, taking advantage of the same to replenish supplies and prepare for the difficult traveling beyond, the farther west trip will be undertaken, following along the trail that was taken last Fall with the difference that the west side of the Rio Grande will be taken as far as San Antonio. The iron bridge will be crossed at this point when the north side of the river will be kept in sight to Socorro and beyond the route will touch Magdalena and Rito Quemado, thence to Springerville.

Best Route From Tampa to Chicago

In traveling from Tampa, Fla., to Chicago, Ill., it is recommended that the best road is via Jacksonville, Fla., Savannah, Milledgeville and Atlanta, Ga., thence to Chattanooga, Tenn., Louisville, Ky., reaching Indianapolis, Ind., and on to Chicago. Nearly all of these routes are given in detail in Volumes 3 and 4 of the *Automobile Blue Book*. The route between Atlanta, Ga., and Louisville, Ky., however, as shown in White's Route Book No. 6, will help the tourist materially on this part of the way. This book may be had by addressing the White Company, 1402 Broadway, New York.

A very good route to take from Buffalo to New York City, N. Y., is through Broome County via Elmira and Binghamton, and then on via Deposit and Cook's Falls to Monticello and Middletown. From this point the macadam road to Port Jervis will be much enjoyed. The mileage given in the *Automobile Blue Book* is as follows:

Buffalo to Elmira, 160.2 miles; Elmira to Binghamton, 63.6 miles; Binghamton to Middletown, 120 miles, and Middletown to Port Jervis, 20.6 miles.

In traveling from Keene, N. H., to Ithaca, N. Y., the best route seems to be from Keene through Greenfield, Bennington and Troy, thence through Schenectady to Utica and on to Syracuse, taking departure to Port Jervis, fetching up at Ithaca. An alternate route from Troy would be via Albany to Oneonta, thence to Ithaca; this latter route is shorter, but the roads are not so good. Maps and details of these routes are given in Volume 1 of the *Automobile Blue Book*.

Fig. 5— Glimpse of an ancient institution—the San Miguel Mission

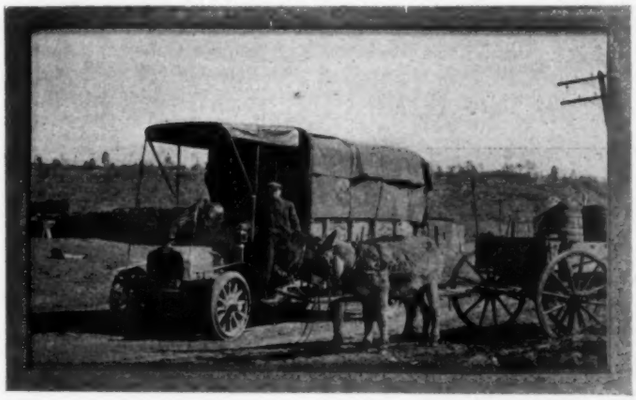


Fig. 6—A little competition—near Romeroville, New Mexico

Good Road from Chattanooga to Rome

ROME, GA., March 27—The Chattanooga County Grand Jury has indorsed the highway from Chattanooga to Rome.

Elgin Road Race Preparation

CHICAGO, March 27—All doubt as to the farmers agreeing to let the National stock chassis road races of the Chicago Motor Club be run over the Kane county course has been removed by the action of the property owners who have agreed to terms with the Elgin Automobile Road Racing Association. There was considerable haggling over the consideration the property owners were to receive and this delayed matters for several days. When the Chicago Motor Club and the Elgin Automobile Road Racing Association issued an edict to the effect that unless the farmers came to terms by to-night the races would be taken somewhere else the farmers got busy, organized and appointed a committee of five to complete the negotiations. This committee asked that instead of every property owner being guaranteed $25 this guarantee be graded according to frontage so that the small owners will receive $10, some $25 and those owning 40 rods or more frontage on the course will get $75. This was agreeable to the Elgin promoters and now the work of securing the signatures of the farmers is going on. It is expected that some time this week a contract between the Chicago Motor Club and the Elgin Automobile Road Racing Association will be signed.

Intercounty Roads Favored in Ohio

COLUMBUS, O., March 27—If chances look good, according to a statement by former Senator Alsdorf, a bill will be introduced in the Legislature providing for a State levy for the benefit of intercounty highways. A direct State levy is favored over a bond issue. "If Ohio is to enter on an era of road building," said he, "it must not be by building two or three miles of road each year. We must start in earnest."

He advocated the intercounty system, to which county roads, he said, could be made auxiliary.

Fig. 7—A fairly good road five miles south of Las Vegas

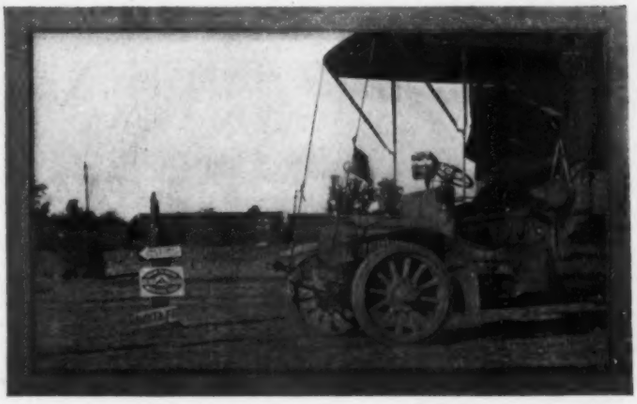


Fig. 8—Marking of the old Santa Fé trail supplemented by markers that were put up last year

Flanders "20" in Motion Pictures

Showing by 10,000 feet of moving-picture films the processes by which raw material is converted into Flanders "20" cars, a party of factory officials of the E-M-F Company imparted an object lesson to its representatives in this territory on Monday.

About eighty towns and cities were represented by nearly twice that number of agents and salesmen. The object lesson began in the morning when the visitors and a number of guests were loaded into motor buses and taken through the city to Fort George Hill, where a Flanders car was demonstrated.

This car is shipped around the circuit with the factory officers and is used in making all tests for the benefit of the agents. The performance of the car on the hill was pleasing to the observers and shortly after noon the buses returned to the heart of the city, where luncheon was served at the Hotel Marie Antoinette.

After luncheon there were a few brief speeches by Manager C. F. Redden, of the Studebaker Company, who acted as toastmaster; Paul Smith, assistant general sales manager; Bob Davis, of *Munsey's Magazine*, and James C. Heaslet, who designed the Flanders car.

Then followed the feature of the entertainment when seven reels of picture films were run through a machine showing the various steps taken at the factory in manufacturing the Flanders. Mr. Heaslet described the pictures as they were shown.

The full list of agencies represented at the demonstration and luncheon included the following:

Long Island—Brooklyn, Carpenter Motor-Vehicle Company; Bay Shore, C. V. Searing & Company; Patchogue, J. Henry Wolf; East Hampton, Easthampton Auto Station; Flushing, Queensboro Garage (Jockers & Stack); Far Rockaway, Far Rockaway Garage (Mott & Smith); Glen Cove, S. J. Seaman, Jr.; Huntington, Walter H. Flessel; Hicksville, Carl J. Karlson; Jamaica, Morris' Auto Garage; Oyster Bay, Blue Rubbon Garage & Repair Company; Patchogue, C. V. Searing; Port Washington, Hyde & Hults; Port Jefferson, A. N. Randall; Rockville Centre, Veit & Remsen; Riverhead, John H. Hagen; West Hampton Beach, Graphic Cycle & Automobile Works.

New York State—Amsterdam, Van B. Wheaton; Albany, C. F. Weeber Mfg. Works; Croton-on-Hudson, William H. Ash; Catskill, Catskill Automobile Company; Fort Plain, Rebell's Garage; Glens Falls, Glens Falls Automobile Company; Gloversville, J. August Schmitt; Kingston, Forsyth & Davis; Mount Vernon, Mount Vernon Motor Car Company; Margaretville, Sanford Automobile Company; Middletown, Empire Garage Company; Malone, Eldredge & Mason; Mount Kisco, Mount Kisco Automobile Company; Newburgh, Bellinger's Garage; Nyack, Nyack Auto Garage; Peru, Clough Brothers; Port Jervis, Gordon Sporting Goods Company; Poughkeepsie, Ryder Motor Company; Roscoe, Roscoe Hardware Company; Stony Point, Blume & Keesler; Schenectady, L. C. Meeker; Tuxedo Park, W. M. Weygant; Troy, Martin Payne Sulky Company; White Plains, White Plains Garage Company; Yonkers, Yonkers Auto Station.

PRESIDENT FLANDERS, OF THE E-M-F COMPANY

From left to right, top row: William Soule, racing driver; Harry Cunningham, Frank Shaw, manager traffic department. Lower row: C. H. Booth, production

Staten Island, (N. Y.)—Stapleton, Louis Blume; Tottenville, W. T. Abbott.

Connecticut—Bridgeport, The Elm Auto Company; Danbury, Fillow Auto Company; Greenwich, A. N. Kemble; Hartford, Palace Automobile Station Company, Inc.; Middletown, F. L. Caulkins Garage; Norwalk, Norwalk Consolidated Auto Company; New Canaan, Johnson Carriage Company; New Haven, Reichert Automobile Company, Inc., Shelton, Shelton Garage; Stamford, Bell Brothers' Garage; Southport, Buckley's Auto Station; Waterbury, Youman's Garage.

New Jersey—Asbury Park, Zacharias Garage Company; Butler, C. G. Wilson; Belvidere, Frank M. Bair; Dayton, Charles R. Wines; Elizabeth, Walter E. Camping; Freehold, H. D. Hance; Flemington, John D. Lawshe; Hackensack, Bacon's Garage Company; Morristown, F. A. Trowbridge Company; Long Branch, Cooper & Tomasky; New Bruswick, S-A-M Garage; Newton, A. B. Hoyt; Plainfield, Andrew C. Thompson Automobile Company; Perth Amboy, Parker House Garage Company; Passaic, Geo. DeW. Brown; Paterson, O. Peterson (The Broadway Garage); Ridgefield Park, S-F Garage; Rahway, Terrill Brothers; Saddle River, W. H. Packer; Somerville, J. C. Henry; Summit, E. F. Anderson; Tenafly, H. LeRoy Demarest; West Hoboken, Clinton Auto & Garage Company, Inc.

A group of the E-M-F agents taken in front of the Marie Antoinette.

PHILADELPHIA, March 23—Prominent officials of the company and dealers and agents to the number of 100 of the E-M-F and Flanders "20" from the district embracing eastern Pennsylvania, southern New Jersey, Delaware and Maryland assembled in convention at the Hotel Walton here on Tuesday. Instructions to distributers and the advantages accruing from the E-M-F Company's methods of manufacture formed the theme of the officers who made addresses, and agents were further enlightened as to the construction of the various stages of the company's product by moving pictures. Preceding the pictures a dinner was given in the hotel's banquet hall.

AND THE MEMBERS OF HIS OFFICIAL FAMILY
consulting engineer; F. H. Smith, sales manager; Paul Smith, assistant sales manager; manager; Walter E. Flanders, pres.; Leroy Pelletier; J. G. Heaslet, designer.

Service Building for Kissel-Kar

MINNEAPOLIS, MINN., March 27.—The contract for the new Kissel building in Minneapolis, at Thirteenth street and Hennepin avenue, was awarded last week and work will begin on the structure soon. It will be 71 by 184 feet in dimensions and will be two stories high with basement. Manager Hughes expects that the building will be ready for occupancy by July 1.

The showroom will be 71 by 60 feet, with the entire front of solid glass. The front of the building, according to specifications, will be rather ornate in design. Mill construction will be used throughout.

When the new structure is ready for use it will be devoted entirely to the use of Kissel-Kar owners. Machinery and repair shop will be installed for the making of repairs to cars of this make owned in Minneapolis.

New Company Ready to Start

BOWLING GREEN, OHIO, March 27.—The Bowling Green Motor Car Company has organized and already work has begun on the factory buildings, the office being fixed up for early occupancy. General manager S. F. Sawyer has been in Cincinnati, Cleveland and Peru, Ind., buying machinery.

The officers of the company are: J. B. Wilson, president; S. F. Sawyer, vice-president and general manager T. J. Miller, secretary; J. W. Underwood, treasurer; executive board, S. F. Sawyer, F. C. Moore and J. B. Wilson. The directors are S. F. Sawyer, A. C. McDonald, F. Lee Roush, C. B. Kurtz, B. A. Gramm, J. B. Wilson, T. J. Miller, F. C. Moore and J. W. Underwood.

To Find Contest Rules

Pending the publication by the A. A. A. of the contest rules to govern racing, reliability tests and hillclimbs, the Contest Board of that organization is using the two issues of THE AUTOMOBILE in which the rules were fully and exclusively published to supply the demands of those interested in contest matters.

Knowing that the publication of the rules in book form would take time, THE AUTOMOBILE foresaw that there would be an early demand for the official rules and on March 2 and March 23 the complete text was carried. The booklet may be ready for distribution in a little over a week's time.

Trade Activities at Detroit

DETROIT, MICH., March 27—As a result of a deal closed the past week, whereby the Cadillac Motor Car Co. acquires the Detroit plant of the Monroe Body Co., of Detroit and Pontiac, the former company is now manufacturing practically every part of its car. The body plant is located at Fort and Twenty-fourth streets, and employs 450 men. It will continue running full time, turning out 75 bodies per day. R. F. Monroe, of Pontiac, will continue to act as manager for another year at least. The new arrangement enables the Cadillac Co. to control the production of its cars from the purchase of the raw materials to the finishing of the body. The terms of the purchase were not made known.

Several new corporations, organized for the manufacture of motor cars or parts, have come to light during the past few days. The Wayne Motor Co. has filed articles of incorporation with the Secretary of State. The capital stock is $30,000 and the incorporators are Alpheus Collins, Detroit; George W. Woods, Walter H. Woods and Andrew Hunter, all of Ann Arbor. The Michigan Steering Wheel Co. has been organized with a capital of $7,000 and will manufacture solid-bent steering wheels at 274-278 Wight street, employing 35 men. The principal stockholders, all Detroit men, are: Titus L. Denk, Ward B. Asbury, Hugo I. Denk, Eugene A. Bresler and John Elliott. The Commerce Motor Car Co., of Detroit, has established a Canadian connection with the Watson Carriage Co., Ltd., of Ottawa. The latter concern will build and market the Commerce delivery car in the dominion. The negotiations for this arrangement were carried on through W. H. C. Burnett, of this city.

The E-M-F plant No. 3, where the Flanders "20" is made, took on 100 additional machinists this morning and is increasing its activities all along the line. Automobile builders at Flint, want a large number of experienced painters at once. The Chalmers Motor Co. is putting on additional j. and l. operators, transmission assemblers, inspectors, drill press hands and truckmen. Dodge Bros. are advertising for lathe, bench and drill press hands for both day and night work in their mammoth new plant in the northeast end of the town. The McCord Manufacturing Co. needs radiator repair men and testers and bodymakers are wanted by the C. R. Wilson Body Co.

Fire's Work Short Lived

CLEVELAND, March 27—Though it is only a little more than two months since the plant of the Gabriel Horn Company, Cleveland, was destroyed by fire, the new plant has been completed and is now in operation.

How the dealers looked while witnessing the unique motion picture show after luncheon.

Pittsburg Show Registers Success

PITTSBURG, PA., March 27—The fifth annual show of the Automobile Dealers' Association of Pittsburg opened at Duquesne Garden Saturday night. In attendance, number of exhibits and beauty of displays, the show far excels any other show put on by the Association in this city.

More money has been spent this year than ever before, and it has been spent in a way which makes every dollar invested show to the best advantage. The immense festoons of bunting were illuminated by thousands of electric lights set in immense circles in the ceiling and forming a score of brilliant arches over the two main aisles of the Garden. The mural effects on the walls were entirely new and to the lovers of art formed one of the most interesting features.

More than $500,000 worth of domestic and foreign cars are on exhibition. The accessory exhibits, larger in number than ever before, are arranged entirely around the balcony and are easily reached by four broad stairways brilliantly lighted and set with palms and ferns. A profusion of flowers ornaments the entire Garden. The music for the entire week will be furnished by Carl Bernthaler, director, and an orchestra composed of former artists from the Pittsburg Orchestra.

The show is distinctively a pleasure vehicle exhibit. Nothing but a few motor boats interrupt the interest in the splendid display of high-class cars. While the cars are high class they are not all high priced, for every style car from a $450 runabout to a $5,000 touring machine is on exhibition. The most striking feature of the first two evenings of the show was the large proportion of out-of-town visitors, numbering dozens of the leading automobile dealers in Western Pennsylvania, Eastern Ohio and West Virginia. Advices received from these towns indicate that many of them are going to send a full delegation of dealers and salesmen later in the week to study the modern automobile business as exemplified in Duquesne Garden.

Especially interesting to these dealers will be the number and variety of the strictly new models, many of which have never been seen outside of large cities in this territory. It is also evident from railroad reports that a small army of prospective buyers is going to be on the ground this week from these out-of-town points to view for purposes of selection the array of 1911 machines.

The Duquesne Garden show tells more plainly than any story the progress which has been made in the sale and use of automobiles in Pittsburg since 1907. At that time it was thought almost impossible to get up an automobile show. This year two shows have competed for the attendance and attention of the thousands of automobile lovers in Tri-State territory.

Local dealers at the show report several interesting features. One of the 1911 demands, so far as greater Pittsburg is concerned, is distinctly for medium priced cars. This explains why the second-hand dealers have been doing such an enormous business this year. The out-of-town buyers especially are calling for cars costing from $1,500 up and their interest in this exhibition proved them to be probable purchasers in the near future. The heavy touring car is also in good demand with well-to-do buyers and these cars have come to stay in Pittsburg because of their success in taking the heavy grades and bad roads that have made this section a stumbling block to many automobile manufacturers. The electric vehicles called forth a large amount of favorable comment and it is safe to say that they are seen more on Pittsburg streets now than in any previous year.

The commercial truck exhibit is being held in reserve for next week, when there will be shown the finest lot of commercial trucks ever put on show in Pittsburg. A few well-known trucks are on exhibition this week and the interest taken in these by manufacturers proves that next week's commercial show is going to be a hummer.

The officers and members of the Automobile Dealers' Association of Pittsburg, under whose auspices the Duquesne Garden Show is being put on, are as follows: President, W. N. Murray, of the Standard Automobile Co.; vice-president, Frank D. Saupp, of the Hiland Automobile Co.; treasurer, G. P. Moore, of the Keystone Automobile Co.; secretary and also chairman of the show committee, R. P. McCurdy, of the McCurdy-May Co. The other members of the show committee are: A. X. Phelan, W. W. Bennett, of the W. W. Bennett Motor Car Co.; O. E. Vestal, of the Vestal Motor Car Co., and E. C. McCurdy. The other members of the Automobile Dealers' Association are: M. J. Myers, Herman H. May, L. C. Myers, R. H. Williams, Frank C. Kunkel, Tom Dunn, H. N. Munhall, W. L. Poffinberger, I. Guy Davis, W. J. Thubron, W. F. Reynolds and Charles F. McLaughlin. The complete list of the exhibitors at the show is as follows:

Kline Kar Hospital Ambulance, which is the latest effort from this well-known plant. This car is of the Model 6-50, six-cylinder, with a wheelbase of 124 inches, using 36-inch wheels. The car is for use in St. Louis, Mo.

AUTOMOBILE DEALERS

Acme Motor Car Company (S. G. v.), Pittsburg.
Arlington Motor Car Company (Jackson), Pittsburg.
Anderson Auto Company (Atlas), Pittsburg.
Baker Electric Company (Baker Electric), Pittsburg.
Becker, A. J., Company (Willoughby bodies), Pittsburg.
Buick Motor Company (Buick), Pittsburg.
Bennett, W. W., Motor Car Company (Pope-Hartford), Pittsburg.
Bennett, W. W., Motor Car Company (Marion-Flyer), Pittsburg.
East End Auto Company (Waverley Electric), Pittsburg.
East End Auto Company (Paterson "30"), Pittsburg.
Franklin Auto Company (Franklin), Pittsburg.
Glesenkamp, L., Sons Company (Automobile bodies), Pittsburg.
Hiland Auto Company (Peerless), Pittsburg.
Hiland Auto Company (Hupp-Yeats), Pittsburg.
Hiland Auto Company (R. & L. Electrics), Pittsburg.
Keystone Auto Company (Stoddard-Dayton), Pittsburg.
Keystone Auto Company (Marmon), Pittsburg.
Pittsburg Interstate Company (Krit), Pittsburg.
Manchester Garage Company (Chicago-Staver), Pittsburg.
Michigan Motor Company (Michigan), Pittsburg.

Premier Sales Company (Mercer), Pittsburg.
Pullman Motor Company (Pullman), Pittsburg.
Michigan Motor Company (Cadillac), Pittsburg.
McCurdy-May Company (Pierce-Arrow), Pittsburg.
McAlister Bros. Motor Car Company (Westcott), Pittsburg.
W. Murray Car (Owen), Pittsburg.
Phelan, A. X. (Lozier), Pittsburg.
Pioneer Motor Car Company (Locomobile), Pittsburg.
Pioneer Motor Car Company (Hudson), Pittsburg.
Pennwood Motor Car Company (Empire "30"), Pittsburg.
Pittsburg Interstate Company (Interstate), Pittsburg.
Pittsburg Chalmers Company (Chalmers), Pittsburg.
Quinby, J. M. & Co. (Automobile bodies), Pittsburg.
Quinby, J. M. & Co. (Simplex), Pittsburg.
Standard Auto Company (Packard), Pittsburg.
Stearns, F. B. Company (Stearns), Pittsburg.
Thompson, E. J. Company (Automobile bodies), Pittsburg.
United Motor Pittsburg Company (Maxwell), Pittsburg.
United Motor Pittsburg Company (Columbia Electric), Pittsburg.
Vestal Motor Car Company (Stevens-Duryea), Pittsburg.
Elmore Motor Car Company (Elmore), Pittsburg.
Winton Motor Car Company (Winton), Pittsburg.
White Company (The) (White Steamer), Pittsburg.
White Company (The) (White Gasoline), Pittsburg.
Premier Sales Company (Premier), Pittsburg.
Premier Sales Company (Reo), Pittsburg.
Hupmobile, Corbin, Ohio; Clark and Abbott, Detroit, each of which has a Pittsburg agency.

AUTOMOBILE ACCESSORIES

Automobile, The, New York, N. Y.
Atlantic Refining Company (oils and greases), Pittsburg.
Auto Trading Company (second-hand cars), Pittsburg.
Air-Tight Steel Tank Company (tanks and cylinders for storage), Pittsburg.
Ætna Insurance (auto insurance), Pittsburg.
Atlas Chain Company (tires), Brooklyn, N. Y.
Automobile Journal (auto journal), Pittsburg.
Auto Accessories Company (auto accessories), Pittsburg.
Banker Wind Shield Company (wind shields), Pittsburg.
Bratton, W. G. (wind shields), Pittsburg.
Clayton Air Compressor Company (pumps), Pittsburg.
C. D. & P. Telephone Company (Bell telephone), Pittsburg.
Doubleday-Hill Electric Company (batteries, motors, etc.), Pittsburg.
Duquesne Auto Parts Company (wind shields), Pittsburg.
Electric Auto Horn Company (electric horns), Pittsburg.
Eyler & Henry (auto insurance), Pittsburg.
Flentje Shock Absorbers (shock absorbers), Pittsburg.
Hydraulic Oil Storage Company (storage systems), Pittsburg.
Hoffecker Speedometers (speedometers), Pittsburg.
Haymaker, H. A. & Co. (auto dictionaries), Pittsburg.
International Pump Company (pumps), Pittsburg.
Inland Lakes Boat Company (motor boats), Lake Geneva, Wis.
Johns-Manville, H. W. Company (J. M. linolite), Pittsburg.
Kent-Bell Company (auto insurance), Pittsburg.
Motor (auto journal), New York, N. Y.
Keystone Lubricating Company (oils and greases), Philadelphia.
Liberty Auto Tire and Supply Company (auto accessories), Pittsburg.
Meyer Bros. (auto novelties), New York, N. Y.
Motor Age (auto journal), Chicago, Ill.
Mutual Wind Shield Manufacturing Company (wind shields), Pittsburg.
Oakmont Motor Boat Company (motor boats), Oakmont, Pa.
Pope Boat Company (motor boats), Fond du Lac, Wis.
Petroleum Products Company (oils, greases and soaps), St. Joseph, Mich.
Pneumatic Tubeless Tire Filler (tubeless tire filler), Pittsburg.
Pittsburg Auto Lamp Repair Company (radiators, lamps, etc.), Pittsburg.
Pittsburg Auto Equipment Company (auto accessories), Pittsburg.
Pittsburg Cinch Tire Repair Co. (auto tire repairs), Pittsburg.
Pannier Bros. Stamp Company (auto stamps), Pittsburg.
Racing Boat Manufacturing Company (motor boats), Muskegon, Mich.
Shell Lake Boat Company (Motor boats), Shell Lake, Wis.
Stephenson, Geo. W. (auto insurance), Pittsburg.
Standard Automobile Company (auto accessories), Pittsburg.
Sharp Spark Plug Company (spark plugs), Cleveland, Ohio.
Truscott Boat Manufacturing Company (motor boats), St. Joseph, Mo.
Union Wind Shield and Top Company (wind shields), Pittsburg.
Woodwell, Jos., Company (auto accessories), Pittsburg.
Wayne Oil Tank and Pump Company (oil tanks and pumps), Pittsburg.
Winterton Manufacturing Company (wind shields), Pittsburg.
Waverly Oil Works (oils), Pittsburg.
Mascot Pump Company, Pittsburg.
Pittsburg Leader, Pittsburg.
Leader Manufacturing Company, Cleveland.
Chamberlain-Desoloo Company, Pittsburg.
Cleaning Device Manufacturing Company, Pittsburg.
Griffin Vulcanizing Company, Pittsburg.

MOTOR TRUCKS

Buick Motor Car Company.

Franklin Automobile Company, 5926 Baum Street, Pittsburg, Pa. Franklin one-ton trucks, stake platform, one express body, one ambulance, one 1,000-pound delivery wagon, one taxicab.

Pennsylvania Motor Car Company, 916 Boquet Street, North Side, Pittsburg, Pa. Lyons one-ton trucks.

Standard Automobile Company, Grant Boulevard, Pittsburg, Pa. Packard three-ton fire truck, three-ton chassis, chemical tanks, etc.; three-ton service truck, three-ton service truck (chassis), 1½-ton truck, Packard ambulance, quick delivery, fire squad wagon, police patrol.

McCurdy-May Company, Grant Boulevard, Pittsburg, Pa. Pierce-Arrow, Pierce five-ton trucks.

Rapid Motor Truck Company. Rapid one-ton truck, two-ton truck, three-ton truck.

United Motor (Pittsburg) Company. Sampson one-half ton, one-ton, two-ton, three-ton, four-ton and five-ton vehicles.

Watertown Gives Lively Show

SYRACUSE, N. Y., March 27—Encouraged by the success of the automobile show held here under the auspices of the Automobile Club of Syracuse, the Watertown Automobile Association held one this week; and the live organization of the little city seventy miles north of here scored a most satisfactory success, both in point of sales made and business done.

The show opened on Wednesday and ran four days, being held at the State Armory.

In many of the garages about the city individual exhibits were made of cars which could not be accommodated in the Armory. The Armory exhibit represented a value of $75,000.

The Babcock Company, formerly maker of carriages exclusively, is now manufacturing automobiles, so there was a Watertown-made exhibit of six cars, ranging from a delivery truck to a $4,000 limousine. The Babcock exhibit totaled $16,500 in price.

The Watertown Auto Supply Company also had a fine exhibit, aggregating $19,000 in value.

A feature of one exhibit was a car owned by Dr. George Parker, which was run all last season at a total expenditure of 75 cents for repairs, this item due to a punctured tire.

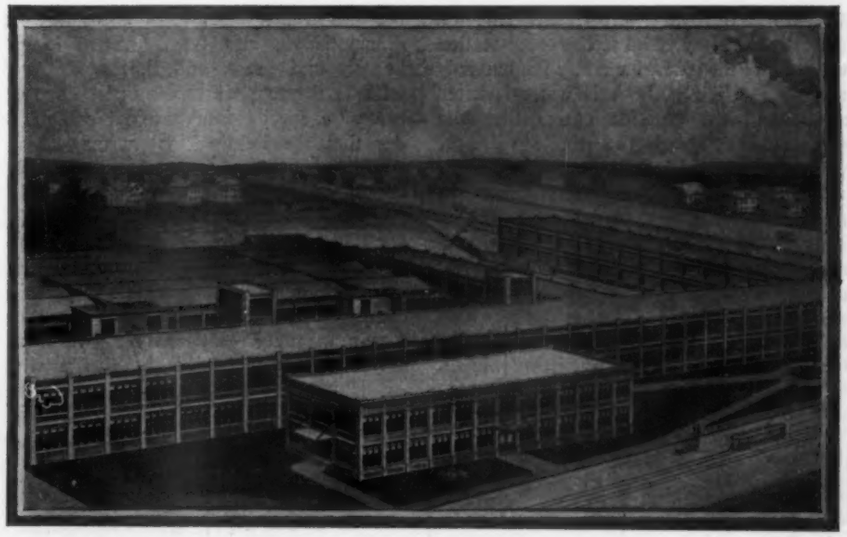
Other exhibits were by the Standard Oil Company, People's Oil Company, Hyde Steel Boat firm, Central City Supply Company and others. A feature was an exhibit of small aeroplanes made by Y. M. C. A. boys. The decorations were very pleasing.

Delegations from Canton, Ogdensburg, Syracuse and many other central and northern New York points attended the exhibition, which closed with a big attendance record and a success in every way. There was a large sale of cars.

So successful has been the initial show that it is the intention of the association to make it an annual feature.

Hood Goes to Metzger Company

DETROIT, MICH., March 28—The Metzger Motor Car Company announces the appointment to-day of Wallace C. Hood as sales manager, Mr. Hood resigning as sales manager of the Chalmers Motor Company to accept this position. He has been connected with the automobile industry for twelve years. He will assume charge of the sales department at once. This is the latest development of the Metzger company's policy to build up a complete expert organization for the manufacturing and marketing of the Everitt thirty.



Lozier plant at Detroit which has been undergoing construction since May, 1910, and has just been placed in operation. It is of steel and concrete construction and was built under the Kahn system.

ACCESSORIES

HOFFECKER SPEEDOMETER

The principle on which this speedometer works is that of centrifugal force, having a perfectly balanced governor with all main bearings running in high-test steel balls. The shafts are case-hardened and ground to size. Fig. 1 illustrates two styles of speedometer of this make, also the connection on the end of the flexible shaft and C the bracket designed to fit any car. Each instrument is hand calibrated for each speed, as the dial in B shows. The connection D is solid with the end of the shaft, and is in the form of a key. The registering hand runs steady at all speeds, and incorporated in Model B there is a mileage recorder. The instrument is made in several different models by the Hoffecker Co., Motor Mart, Boston, Mass.

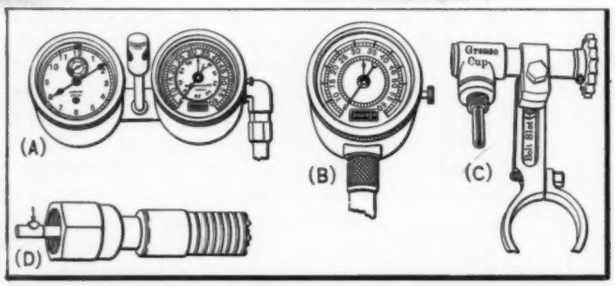


Fig. 1.—Hoffecker speedometers together with universal bracket carrying the pinion and cable connection with key pressed solid with the shaft.

STEWART PRECISION CARBURETER

The carbureter here shown is manufactured by the Alfred C. Stewart Machine Works, 1008 Santee street, Los Angeles, Cal. Referring to Fig. 2, the cross-section view shows the parts, including the butterfly throttle C. The body A is water-jacketed at B, and the gasoline enters the float chamber K through the needle valve N which is operated by the float L. The air valve E shown in the illustration in the middle of its stroke is perfectly free to slide up and down, and would rest normally on its seat, entirely closing the air passage J. The air valve is lifted from its seat by the suction of the motor high enough to allow the air to pass, but its own weight will prevent it lifting higher. The gasoline is sucked up from the float chamber, the lower end of the valve stem extending into the gasoline and the regulating pin P extending into it. This pin is tapered, and consequently the higher the air valve lifts the larger will be the aperture for the gasoline to pass. The valve is prevented from jumping by the dash pot effect of the gasoline at the lower end of the stem. Air is supplied to the combining tube S by drilled holes T U.

LIGHTING THE HEADLIGHTS FROM THE DASH

The "Flash" Auto Lighter system for automatically lighting acetylene headlights on an automobile from the driver's seat (Fig. 3) comprises essentially three parts, viz., a controller, an induction coil and a pair of special burners. The controller is secured to the dash of the vehicle, and presents a single lever for operating. A single turn of this lever to the left starts the sparking at the burners and also admits the gas to the spark gaps, the completion of this turn leaving the lamps lighted and the sparking stopped. Both lamps are lighted at the same instant, and the whole operation is instantaneous, simple and automatic as described. A single turn in the reverse direction extinguishes the lights. The burners are provided with sparking points rigidly clamped in position directly over the gas vents. The coil is of the ordinary single unit type, finished in mahogany and brass, and thoroughly guaranteed; the manufacturers insist upon the use of a special four-terminal coil in order that the lighting system may be entirely independent of the engine ignition circuit. A simple wiring plan is provided, requiring no electrical or mechanical skill for attaching the device, and all piping and attachments necessary are furnished packed with the outfit. The apparatus may be connected with any source of current except a magneto. This fitting permits the driver to extinguish his headlights when passing through towns, or when passing a restive horse, without descending from his seat, and is manufactured by the Motor Specialties Company, Motor Mart, Boston, Mass.

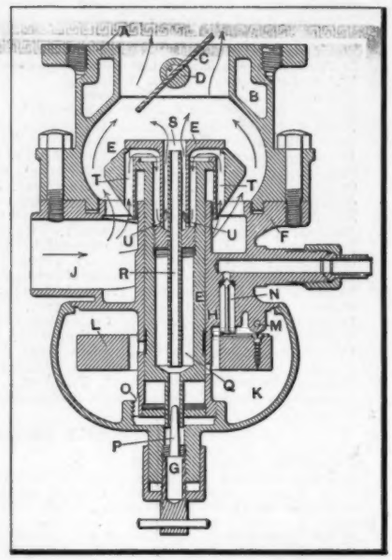


Fig. 2.—Sectional view of the Stewart carbureter, showing the flow of air and gas by the arrows.

WEBSTER GASOLINE GAUGE

The principle on which the Webster gauge works is shown at 3, in Fig. 4. A hole is cut in the tank with the instrument shown, the gauge inserted, and the dial attached in the manner shown at 5. Attached to the end of the rod carrying the ball is a pinion that engages with a vertical shaft on which there is also a pinion. When the gasoline is filled into the tank the ball rises and causes the pinion to rotate the needle to the calibrated position on the dial. The fitting is manufactured by the Randall-Faichney Company, Boston, Mass.

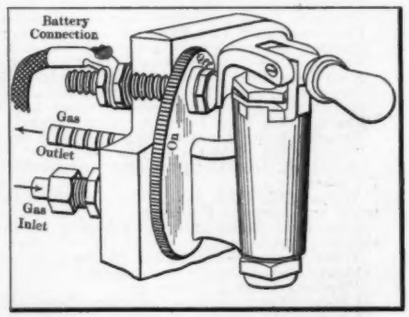


Fig. 3.—Flash Auto Lighter fitted to the dashboard, showing the connections and operating handle.

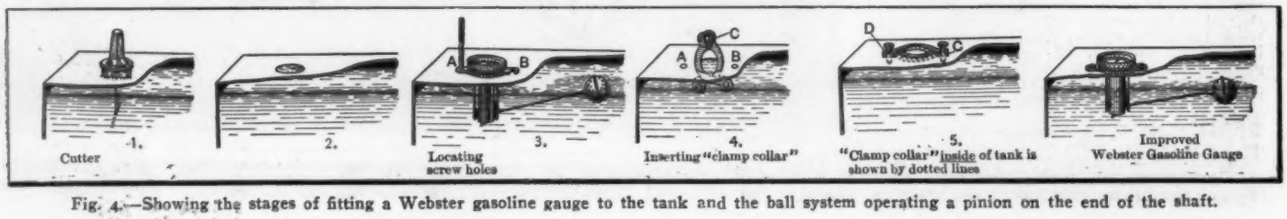


Fig. 4.—Showing the stages of fitting a Webster gasoline gauge to the tank and the ball system operating a pinion on the end of the shaft.